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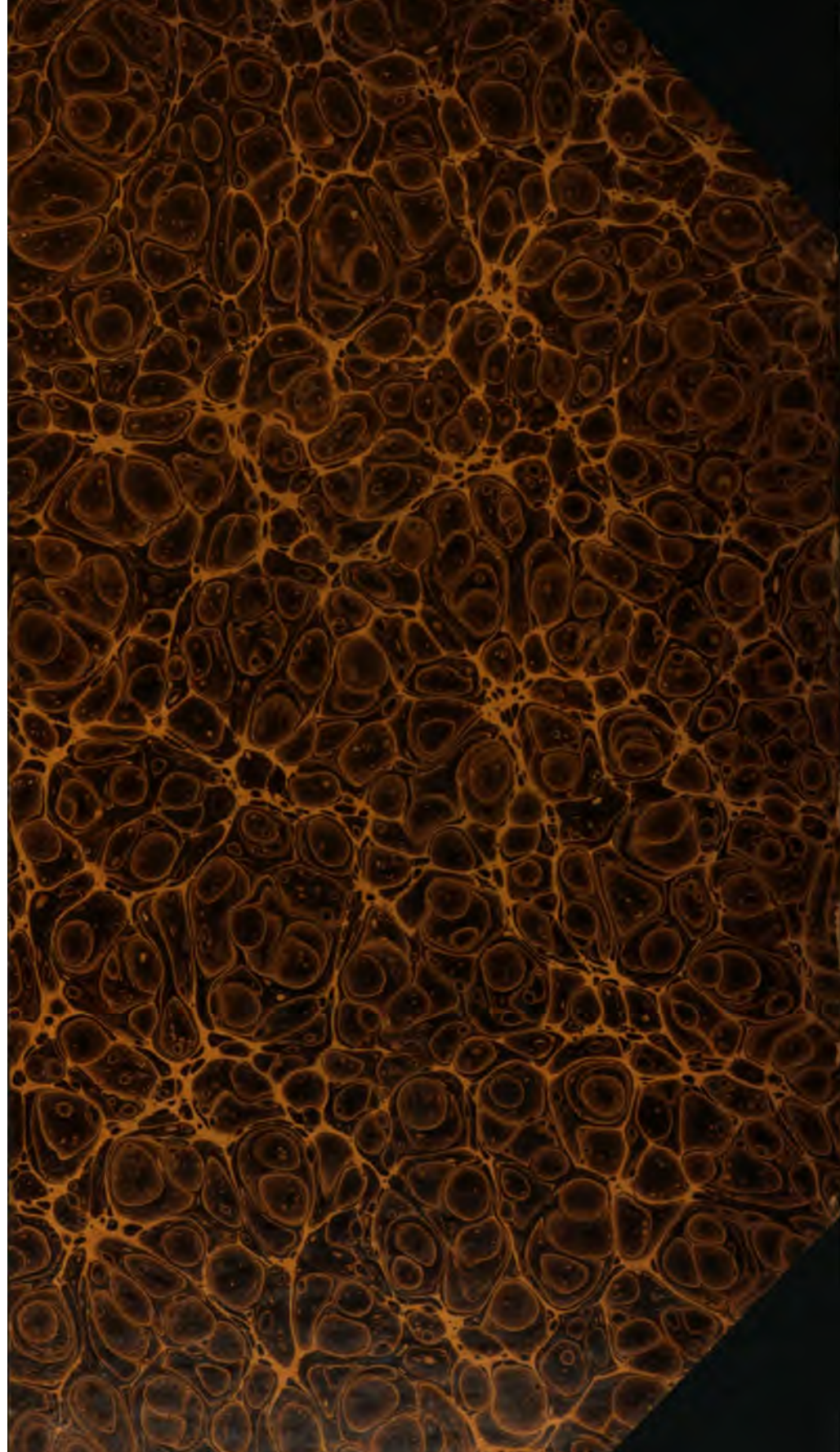
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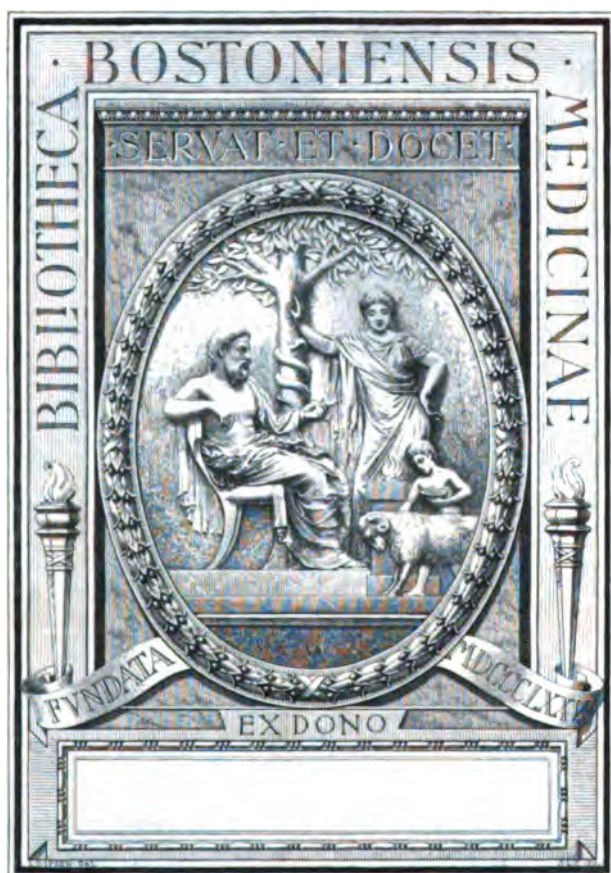
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DOMINION DENTAL JOURNAL

(Official Organ of the Canadian Dental Associations.)



EDITOR:

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TORONTO, CAN.

ASSOCIATE EDITORS:

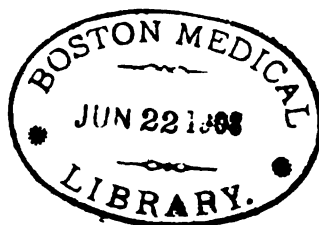
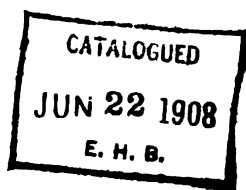
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VOLUME XIX.

THE NESBITT PUBLISHING CO., LIMITED

44 ADELAIDE ST. WEST, TORONTO.

1907.



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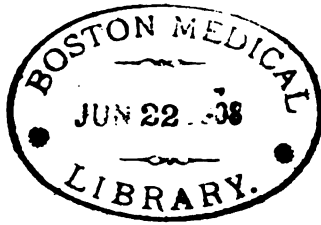
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DR. CHARLES HENRY LAND.



Dominion Dental Journal

Vol. XIX.

TORONTO, JANUARY, 1907.

No. 1.

Original Communications

DR. CHARLES HENRY LAND.

Dr. Charles Henry Land was born at Simcoe, Canada, January 11th, 1847, and came to the United States in 1856.

According to an item in the "Souvenir" of Hamilton, Canada, published in 1891, the first white settler on the land which is embraced in the present city of Hamilton was Robert Land, who purchased a tract of 300 acres in 1778. "The moment of his doing so," tradition says, "when the Revolutionary War broke out, Robert Land dwelt somewhere in New Jersey, on the banks of the Delaware River. He was a loyalist and took the side of Great Britain and actively engaged in maintaining her interests. While absent from his home a party of Indians attacked his house, and his wife and children barely escaped with their lives, and made their way to New Brunswick, N. J. Robert, on his return, finding his home destroyed, and supposing that his family were victims of the Indians, abandoned the place in despair, and sought the British settlements on the Niagara frontier, near the Falls. He remained here a short time, when he migrated and located 300 acres of land on which is now the east end of the present city of Hamilton. Upon this land he erected a cabin, and here lived in solitude for several years. One day, to his great surprise, a weary and travel-stained woman with several large children appeared, and lo! it was his wife with his children, whom he supposed had been murdered by the Indians. Her story was, that she had traced him to the Niagara frontier, and after a time she heard that a man by the name of

Robert Land had removed to the shadow of the mountain, below Ancaster, and here the family were reunited.

In 1892 J. H. Land read a paper before a meeting of the Royal Templars of Hamilton, which was published in an issue of the *Royal Templar*, December 9, 1892. In his paper he stated that this Robert Land was his *great-grandfather*, and in substance repeats the traditions as above.

The *Daily Spectator*, in its issue dated Hamilton, December 22, 1892, announcing the death of Colonel John Land, says: "Colonel John Land was the eldest son of the late Colonel Robert Land, and was born November 11, 1806; died December 21, 1892. He married in 1839 Esther, only child of the late John Morris, by whom he had eight children, six of whom are still living, viz., John H., Secretary of the Royal Templars, Hamilton; Captain Peter M., of Nanaimo, British Columbia; Mrs. David Lucas, of Trafalgar; Mrs. I. G. G. Burkholder, of Hamilton. Of his three sisters and two brothers, only his youngest sister, Mrs. George K. Chisholm, of Oakville, survives him."

NEW JERSEY IN THE REVOLUTIONARY WAR.

The following by the name of Land served on the American side: James Land, in 3rd Battalion, under Col. Sommers, Gloucester County Regiment. He served also in State Line Regiment; George Land, under same command. John Land served in Burlington County Regiment., p.p. 669. Burlington County adjoins Gloucester County on the Delaware River. Settled first in 1667 by Friends from Yorkshire and London, England; came over in ship *Kent*. The Land family came at the same time.

DOMINION DENTAL COUNCIL EXAMINATIONS.

At the supplementary examinations held by the Dominion Dental Council in the first week of December, 1906, the following candidates completed their final examinations and will receive the certificate of the Council: Dr. Juvet, Ottawa, Ont.; Dr. Geddes, Winnipeg, Man.; Dr. Reid, Rapid City, Man. There has been some delay in issuing the regular Council certificate because these certificates had to be very carefully examined and gotten up in proper form, as they are the certificate that will always be issued by the Council. The order for these certificates was given last June, but owing to the great distances of this country and some delay in the Lithographing house they were not received by the Secretary until a few days ago. The Secretary will announce the dates of the next examinations for certificates of qualification in the next issue of this journal.

THE PRACTICAL ADJUSTMENT OF DENTAL PORCELAIN AS APPLIED TO OPERATIVE DENTISTRY.

BY DR. C. H. LAND, DETROIT, MICH.

Read before the Toronto Dental Society.

To give a specific definition for porcelain as applied in operative dentistry, it must be entirely separated from the classes of work where the aim is to provide entire substitutes; such as full and partial sets of teeth, contending that such classes of work represent the greatest amount of artificiality. On the contrary, the operative abhorring extraction; the intention being to support and restore back to the normal. This becomes especially important when to the practical we can with justice add the esthetic. It is upon this basis that porcelain has gradually developed as a means that gives greater opportunities for the practical as well as the artistic in dental restorations.

Quoting from the *Independent Practitioner*, of February, 1887, the following is reproduced:

"The numerous opportunities presented in which this porcelain process will prove to be of great value is almost without limit and has enabled me to practise dentistry on an entirely new basis."

Just eighteen years ago since that time and two years previous will make twenty since the system was reduced to practice. The numerous modifications of that period may be seen by reference to the series of engravings "A," which are reprints from a pamphlet published in the year 1888. They constitute twenty-seven different varieties of operations and thirty-three modifications, and at present are referred to so that we may better compare them with those of more recent date; when it will be seen that while nearly all of them have proven to be exceedingly useful, and some may, in a few instances, remain permanently available, nevertheless the improvements as shown in group "B" almost entirely displace them.

Properly defining the environment for the judicious use of porcelain, its first and most important factor must be based strictly on the idea of esthetics and will find its broadest interpretation when utilized as a means to overcome conspicuous defects in the dental organs. However, from a purely utilitarian standpoint, and although in many instances it will be far superior to any other material, no one will be foolish enough to banish either cement, amalgam or gold. All have their places, dictated by quite a variety of reasons that will remain permanent and substantial.

By referring to the various illustrations as here shown, which

cover a period of twenty years of actual tests, my endeavor will be to locate the individual operations that have proven to be just as durable, if not more perfect in the line of utility than either gold or amalgam, at the same time embodying the esthetic. But before commenting further I must call attention to quotations from my pamphlet published in 1888, as follows:

CEMENTS.

"There seems to be a great want of confidence in the stability of cements, and the surprising feature of this outcry is especially directed against the introduction of this new process, just as though there could be any practical difference between the same application of the cements in this particular instance and the various other methods that are constantly practised, and which are the mainstay of some of the most expensive and valuable results in modern dental art.

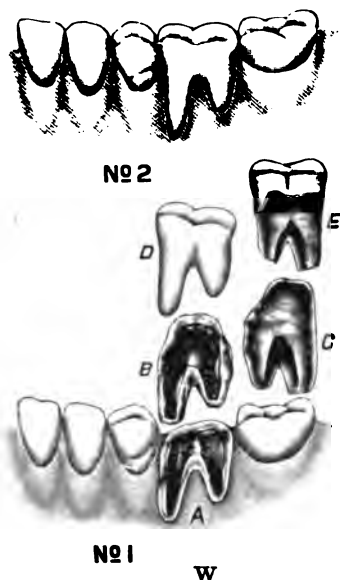
When we take into consideration that our whole system of crowning, comprising upwards of twenty-eight various methods, are almost entirely dependent upon the cements for their proper adjustment, will it not be glaringly apparent that we are either guilty of falsifying to our patient in representing the permanency of bridge work and all our crown work, else those who challenge the durability of an improved modification of the same principles are blindly prejudiced."

AT THE PRESENT STAGE OF PROGRESS,

And continuing the argument, there are some technicalities connected with the use of cements that have been gradually revealed, such as the chemical action that phosphoric acid has an organic matter, and the susceptibility of cements absorbing certain gases during the process of decomposition of abnormal or dead and saturated tooth structure. Here I can offer some substantial testimony that may be of value, based on examples where my enamel metallic caps or jacket crowns were adjusted over central incisors, containing the pulps, for patients at the age of fourteen years, and then readjusted some twelve years later; and others sixteen to nineteen years. In hundreds of instances of this kind I found it to be invariably true that on normal tooth structure the cement adheres as tenaciously to the surface as common glue would stick to wood; that in every instance where a thin film of cement was placed between normal and living tooth structure and an indestructible metal cap or porcelain veneer, the adhesion was remarkably complete, and this after eighteen or nineteen years of use; and that, on the contrary, where the same class of work was adjusted to devitalized tooth structure, the adhesion was gradually lessened, according to the progress of disorganization from the normal or living tooth until it reached a condition where the roots were so thoroughly saturated with corruption

that cements would prove to be a complete failure; hence the resort to mechanical devices, in order to help maintain the crowns, contours, etc. This, coupled with the use of liberal quantities of disinfectants, will have a tendency to hold *in situ* partially decomposed tooth structure. See the engraving "W," Group "B.B." Illustration No. 1. A.

This may be accomplished by mixing 5 per cent. in bulk of the red sulphide of mercury with the cement powder; just enough to give it a slightly pink shade. Or 5 per cent. of the red sulphide of mercury can be mixed with chlora percha, Canada balsam, Sandrach varnish, etc., and used as a paint or varnish to line the cavity previous to adjusting caps or crowns over posts or screws. Take especial notice that such methods are only necessary where old roots have become thoroughly saturated with



corrupt matter by decay, which cannot be entirely removed without sacrificing too much of comparatively useful root. Also remember that in such instances this method of practice is in lieu of the fact that cement, as ordinarily used, will not adhere to such surfaces. While to the normal and comparatively sound tooth structure cements do adhere permanently. This is of great importance when utilizing porcelain in operative dentistry. First of all we should recognize cement as merely an intermedia, which when placed between indestructible surfaces must not only act as a simple filler, but as well have sufficient permanent force to hold the walls from the infiltration of moisture, in addition to rigidly maintaining them; the contact being equal to a soldered joint. By reference to specimens, as shown in the illustration "W," "A" represents the first inferior molar which shows re-

ceding of the gum caused from abscessed roots. In this instance, in order to remove all possible trace of disorganized tooth substance, the cavity was prepared as shown, deeply recessed laterally. "B" is the platinum matrix; "C" the reverse of "B"; "D" completed porcelain section, and "E" the reverse of "D." The section number "2" illustrates relative appearance of the artificial restoration when brought in alignment with the more normal contours, as shown in the second molar and second bicuspid, both of them, also, being built up of porcelain. The bicuspid is, in this instance, maintained merely by recessing the end of the root, the greatest diameter of the cavity being 3-16 by 5-32 and not more than 3-32 of an inch in depth. This is maintained by cements alone, using no metal or posts of any description, and it is the third year since adjusted. In the same mouth may be seen samples of bridge work from the first superior molar to the first bicuspid, held by cements alone. With cavities made in a similar way, also bridging from the first superior molar to the first bicuspid, the intermediate tooth composed of projections, which are integral with the individual teeth. This forms an arch and places the middle tooth somewhat in the position of a keystone directly over the part of the jaw formerly occupied by the root of the second bicuspid. There is a separation in the centre, so that a thread can readily be passed between; also the arched portion leaves a sanitary space which is ideal.

Associated with these restorations may be seen numerous modifications grouped together, such as the equally successful contouring of molars and bicuspid and teeth containing the pulps in their normal state. I have some mouths representing twelve teeth restored, others sixteen and some twenty-eight. In very many cases of this character the pulps have been maintained in their normal state, so the time has arrived when by this process, from inlays to bridgework, a very large percentage can be restored without the use of posts or any trace of metal; depending principally on the proper formation of the cavity or pier, assisted with cements alone as a permanent attaching device.

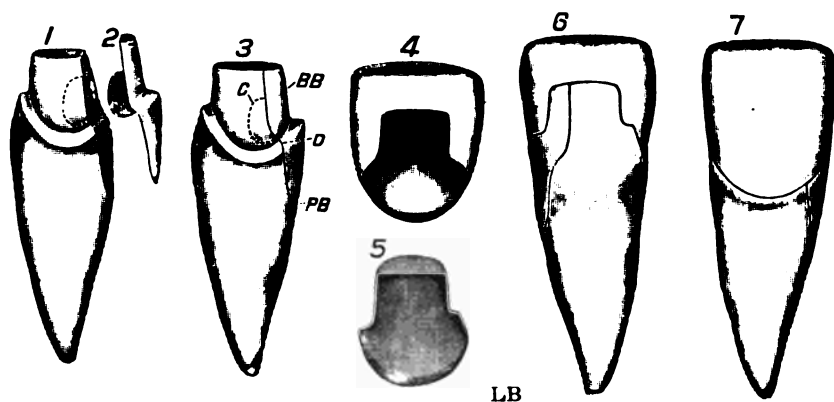
MINIMUM AMOUNT OF CEMENT THE PROPER SYSTEM OF PRACTICE.

To illustrate the importance of not using cement to excess, will refer to illustration L.B., No. 1, Fig. 1. This represents a devitalized superior central incisor (in many instances might contain the pulp). The section B.B. and Fig. 2 indicates a porcelain contour or pier; the figures 3-6 lingual aspect; 7 reverse of 6; 4 porcelain overlapping facing; 5 platinum matrix.

From this it will be observed that the pier extends a considerable distance below the cervical margin of the gum (see P.B. and C.D.), and as indicated by dotted lines, that it projects deeply into what remains of the original tooth crown. Notice

that the circumscribed ledge is continuous, involving both the natural tooth and the porcelain pier; that the overlapping facing or partial hood (fig. 4) is moulded to be adapted as though the whole was original tooth substance. In this we have a practical sample of the reproduction in porcelain of the major portion of the crown of an incisor, using not more than a mere film of cement between the tooth structure and an indestructible filling or coating of porcelain. Some may wonder why we make the operation in two sections. The reply will be that it is impossible to make it so perfect without sacrificing too large a portion of the natural tooth. Again, we must consider that when cavities extend below the gum it complicates the formation of the matrix so that it is not as likely to be as perfect if too extensive.

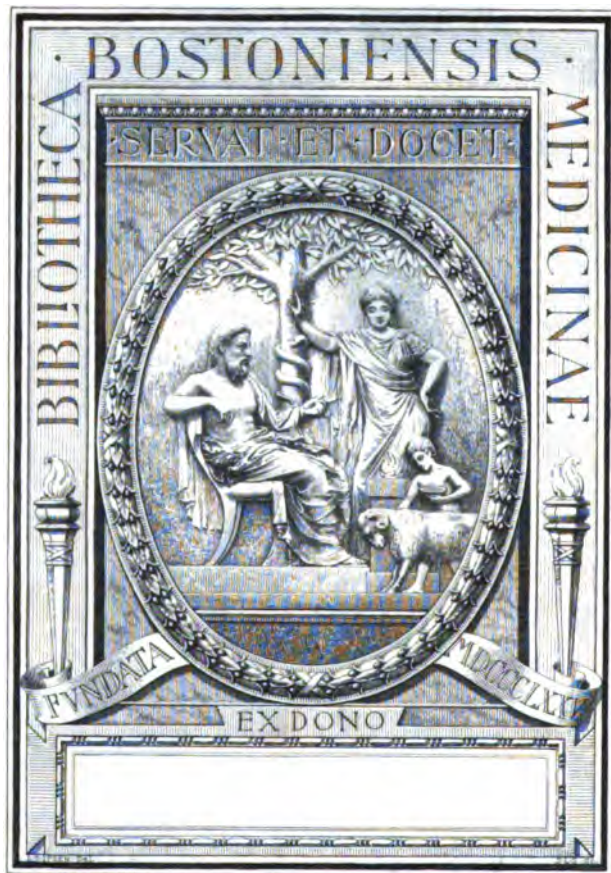
In many instances my methods of practice have been to anchor, say, either entire or partial porcelain piers on the roots of both bicusps and molars and then fit short metal caps of



gold on the grinding surfaces to serve as supports for bridge-work, which can be removable or fixed. In providing such caps the main object is to avoid any possibility of the metal band coming in contact with the gum tissue. I will here use a quotation found in the *Independent Practitioner*, of March 1888, by Dr. Osmun, viz.:

"I have noticed that with banded crowns there was always more or less inflammation around the gum for a time. I have seen them from the hands of men who were splendid workmen, the mechanical part being beautifully done. But in almost every case there has been more or less inflammation around the gum."

I may add that since this declaration, now eighteen years or more, observations will confirm the truth of the contention, and in my own experience I have always looked upon the old-fashioned pivot tooth, bad and all as it may have been, as being better than banded caps. And our modern pivot tooth, even where the joint is not well ground and fitted, such as the Logan and Davis





TORONTO DENTAL SOCIETY.

THE PRESIDENT (Dean Willmott)—Gentlemen of the Toronto Dental Society: Allow me to congratulate you on the success of your inaugural meeting. We have an attendance which is exceedingly gratifying—I think we may assume we have the cream of the profession. (Hear, hear.) It would be under the circumstances quite improper for me to make a speech. I have only one or two words to say: the first is to return thanks for election to the office of President of this Society. For thirty-six years I have occupied an official relation to the Dental profession in Ontario, and for twenty odd years of that time have been a paid officer, and I have persistently refused to accept any other position in the gift of the profession. I thought that it was not a proper thing under the circumstances, and I am sorry that the members of this Society elected me as their president. I acknowledge and appreciate the honor and the confidence, but I can assure you I neither wished it nor worked for it. The duties of the office, fortunately, will be really light. During the year in which I hope to occupy the position I shall be assisted by a staff of fellow officers which will take the burden entirely off my shoulders, and I am sure they will render the Society good service. Allow me again to say that I appreciate very much the honor, which I did not desire but which has been forced upon me. Those of you who were at the meeting at which the Constitution of the Society was organized will appreciate, something at any rate, probably fully appreciate, what was in the minds of the men who provided the new Constitution. One item of the outcome of this is our gathering here together around the social board previous to entering upon more important and serious business of the evening. It was the purpose of the organization of the Society to facilitate as far as possible social intercourse among the practitioners in the city. Personally, I very rarely meet, except at a meeting, a brother practitioner. I do not call on them in their offices, for two reasons: first, I have not the time; and second, if I had, I would be quite sure they had not the time. When I visit other cities it is an exceedingly rare thing that I ever call upon a dentist in office hours. I have experienced so frequently the embarrassment myself that I hesitate to embarrass other people. So that the only opportunity we really have of seeing each other, meeting each other, talking with each other, is on an occasion something of this kind, and I think the advantages are all in favor of having a social meeting together, then entering on the discussion of the evening. I may say it is the purpose of the officers of the Society to have at least three gatherings of this kind during the year, the two other meetings probably to be held in the College building, as being

more convenient for purposes of demonstration. The programme has been partially outlined in the circular which was distributed to every dentist in the city. For the December meeting Dr. George H. Wilson, of Cleveland, will be the guest of the Society, and we hope to see you all on that occasion on the second Tuesday in the month. The meeting in January will probably be a discussion of a pathological question, one of the questions which I think certainly interests all practitioners, the question of infection, and particularly the question of infection as it manifests itself in pyorrhea and alveolar abscess. We have the promise from Prof. McKenzie, who teaches that subject in the College, to give us an address which will probably cover pretty largely the whole question of infection, the methods of infection, the history and development of infection, the formation of pus, the character of pus and the dangers of it, and the rational treatment of the condition. I think you will agree with me that if we can have that subject presented intelligently, definitely, as I am very sure Dr. McKenzie can present it, it will be an occasion of profit and advantage from the practical standpoint. One other meeting will be devoted to local matters, the relation of the profession to the Board of Directors, the relation of the school to the University, what might be spoken of in general terms as dental politics, and we will probably have two or three papers presented and have an evening of education. Some of us think the profession will bear a little education upon some of these points. The arrangements for the final meeting have not been made, but the probabilities are we will have some prominent gentleman from a distance. With this programme we hope to have, not only an interesting, but an exceedingly profitable series of meetings during the winter. To-night we are favored with the pioneer in Dental Porcelain. (Applause.) The profession has not yet paid the debt of gratitude to Dr. Land which they owe to him. A good many people wait until after one is dead before they properly appreciate what he has done. And it may possibly be the case with Dr. Land, that after he has passed away, what he has really done for the profession in this direction will be better appreciated than it is to-day. The history of Dental Porcelain is rather interesting. It has run away from Dr. Land. I was amazed to hear him, the other night, say he has practically abandoned porcelain inlays. I said to him, "You got all the other fellows at it, and then you quit." Well, that was not just Dr. Land's idea of it: he has discovered a better way, after he had the foundation of a faith in porcelain largely built upon its esthetic results. Dr. Land thinks he has now a way of producing better and more permanent results than the insertion of inlays, and the discussion of that theme will be the subject to-night. Instead of putting an inlay in one side of a decayed tooth he proposes to cover the whole tooth up with porcelain so as to

prevent any further decay at any point; in other words he proposes to put a hood on it which will practically protect it. Those of you who have been through the Royal College of Dental Surgeons during my time will remember that I try to teach the students that the dentine is the tooth proper, that the enamel is the protecting covering of what would otherwise be the exposed dentine of the tooth. Dr. Land proposes to go one better than Nature and substitute for enamel an artificial coat of porcelain. I will ask Dr. Land to read his paper, and then we will have such discussion as may be in the minds of the gentlemen present. You will understand there has been no real provision made for discussion; the floor is open to any one, and we do not expect members of the Society to be backward in asking questions or making suggestions or giving adverse criticism.

DR. LAND—Mr. President, and Gentlemen of the Toronto Dental Society: When I received an invitation to attend this meeting I was not as much surprised as I might have been, because I contemplated coming over here to re-identify myself in my home country (applause), and it struck a cheerful note, so I took the chance to make a few remarks on that before reaching the porcelain part of the subject, and I want to identify myself by reading a paper which will let you know who I am and what my sentiments are. I am very much like the man who stayed away from his family so long at a time that he had to come home once a year to get acquainted. I am very much in that fix in regard to my native country. I am particular to have this fact established, because if it ever gets into print, I want it to be known where I belong to, so that my proper identification mark will be better established. I will now present a paper (see page 3) that I read before the Pennsylvania State Dental Society, commenting on which they made the remark that it was too important to bring up in the little time that they had to discuss it. It remained six months in their possession when I received notice that they would like to publish it. In order to comply, this involved on my part the necessity of providing half a dozen new wood engravings, and by the time they were ready I received notice that it was too late for publication, and so, under the circumstances, I feel at liberty to present the matter to you, and with the illustrations I have on charts I can make some of the points, relating to the older known methods, and as briefly as possible outline the process of enamelling teeth. In the paper I will read the salient points only. It is entitled, "The Practical Adjustment of Dental Porcelain, as Applied in Operative Dentistry," and is intended to give a specific definition for the same. For the past twenty years the process has enabled me to practice dentistry on a new basis, which has consisted of inlays, enamel jackets, crowns, contours of various kinds, which include both gold and porcelain, and, finally a complete system of artificially enamel-

ling the natural teeth. Out of all these different varieties of operations, while there are some that have been twenty-two years in use and doing excellent service, yet the new modifications that I have been practicing for the last four years, simply by, either 3-4 covering a tooth with enamel, or 4-5 or 7-8, or covering the entire tooth, or covering just the front of the tooth with enamel, result in one simple system in which every tooth in the head can be treated with less pain than caused by enlarged gold fillings; less fatigue to the patient as well as to the dentist. I have one example where fifteen years ago I adjusted my old style of jacket crown, leaving the platinum on. In this instance there were thirty-one teeth preserved without the destruction of pulps. The case was shown at the World's Fair in Chicago, and all the lady has done since is to clean her teeth, and they are at present doing good service, excepting two or three years ago I observed (what has been seen a great many times since), a slight irritation of the metal caps that merely came in close contact with the gums. They did not impinge, but it occurred to me that since many of my co-laborers had remarked that for some reason or other porcelain did not irritate like metal, I accordingly wished to test it, so I asked the lady to allow me to take off seven of the old caps and wait three or four years and see what the difference would be. I took off four first, and then she was away a year, and when she came back I never saw healthier or prettier gums, but the old caps with the metal still gave evidence of a tendency to irritation. I then took off three more, and am preserving the case to exhibit to the New York dentists and show them three or four years' results; and finally take all the thirty-one off and use no metal whatever. I am working cautiously and steadily, but have seen enough evidence in four years to be thoroughly convinced that it is wonderfully different in the porcelain system of practice. Even if I could not save teeth longer than a year at a time, or had to renew them every year, I should still be in advance of any known branch of dentistry practiced to-day. It is a means of preserving teeth, and doing it with less pain, yet having the esthetic and practical combined. The particular argument against esthetic dentistry is cost. I will take great pleasure in coming to Toronto as often as I can, bringing patients here and letting you examine the work, giving you every chance to test the results, so that when the Toronto dentists and Toronto students understand this work, and get the experience of my twenty years of actual proof, we can make Toronto the greatest and most interesting dental city in the world. (Applause.) There is no braggadocio in this, as facts will prove the assertion. I object to men who become so enthusiastic that they annihilate every other method because their idea seems to be the best. We have no right to abandon substantial processes in dentistry, any more than to obliterate the

electric light or gas. The world wants them all. We must be liberal; all these things have their places, and will as long as dentistry lasts. In this effort I will confine myself to the modern ideas, because if I should undertake to describe all these thirty-two old varieties it would take too long.

I have said that cements do adhere to the normal tooth structure if they are protected. I do not know if any one cement deserves all the credit, but I will say to you that Justi's cement has served me for twenty years, and I haven't changed much from it, because when I find a good friend I don't want to leave him. I have stuck to it all the time, and I have tried some of Ashe's, but there have been cements that have had so much of nitric acid left in their composition that it would burn the cork black in the bottle. A cement should be somewhat neutral; it should not be too strong, or it will break down your tooth and disorganize and injure a good tooth structure. As near as I can find out, Justi's cement is a very neutral cement, and I think it is due to that fact that it is so permanent. It is not so permanent on a wearing surface, but a cement good on wearing surface does not adhere to dentine. I am absolutely certain of that fact. You can depend on it as an assured declaration. I have taken off hundreds of old caps, and have chiselled every little bit of cement off. It is valuable to know these facts, *i.e.*, that a good cement will adhere permanently to normal tooth structure. The usual environment of decay is between the teeth on the labial surface and the fissure cavities, caused by ferments of food. I think ferments are the principal cause of local decay in the teeth, and, as I said, due to the flotation of fluid ferments, following the law of capillarity. You all know that if a fluid substance runs into a narrow space it will go up and stay there, due to that law. I will tell you a story: A jeweller had bought a whole lot of little coppered tubes that had been plated with gold. They were very small, probably not more than one-sixteenth of an inch in diameter, and they contained the copper inside and the gold outside. They had been bought from a wholesale manufacturing jewellery house, and thrown into the scraps to get the gold. He used a little vise, and kept putting them in and ripping them open, throwing them into acid to more readily remove the copper. I said, "Why don't you throw the whole tube in?" He said, "It would take me a week of Sundays to get the copper out." I saw at once, with the phenomenon of the law of capillarity, that the acid flowed into the tube and satisfied itself, and you would have to wait for slow molecular change to osmose. It is similar with regard to your teeth. It is hard to wash cements out of joints in teeth. This is the salvation of the clumsy Logan crowns, because it is very difficult to wash the cement out of a groove; it at least makes decay slower. Before the decay can progress very rapidly it must get the cement out. Just in pro-

portion as you make a good joint, it is so much the more difficult to remove. My objection to inlays is not that they will not preserve a tooth; that is not the thing at all. What discouraged me, and will discourage you all before you get through with them, is that the very class of teeth that is most indicative of inlay work is the light shade, and the cement destroys their color. You cannot get the thickness to a sufficient translucency; the cement provides opaqueness. In any kind of crown there is the phenomenon of the refraction of light that very few people consider. If you pick up an agate on the beach it is rough—there is no way to bring the translucency out of the agate until it is highly polished. You want perfect planes with brilliant polish, and then you see the beauty. In rough surfaces you cannot get translucency. So whenever I fire a porcelain tooth I want to fire it four or five times, and keep on making it a plane surface and glazing it enough to get it reasonably polished. Don't vitrify the first body too much. The best way is to fire to semi-translucency two or three times, and keep putting a polished layer of translucency for each firing, which is impossible if you put it on in bulk. Another thing in regard to the firing of bodies you use: the higher you can raise the fusibility of bodies the more you can play with them without hurting the color. I can take the body of the White and Justi, or any of the high-grade teeth, and manipulate it a dozen times and not have any loss of color, and get the very highest translucency and strength too. In proportion as you put a flux in to reduce the fusing point of a composition of porcelain, you begin to approach opacity, weakness and loss of color, especially loss of color. The way to test your porcelain is to take half a dozen pieces of porcelain on pieces of platinum, and keep them clean, and try to fuse every one of them at the same temperature. Bring them to a fairly good glaze and don't over-fire them; bring them to a uniform glaze. Take number 1 and put it with a second new piece, number 2, so that you do not submit it to any very great difference of temperature. Try that four times, until you have fused the original number 1 four times; fuse another number three, at the same temperature, and then lay them close together and see how much color you have lost. You can do that with these high bodies, and you can hardly see any difference in half a dozen or a dozen firings. It is the over-firing of the low fusing bodies that is giving most of the trouble. I can take a Jenkins body and fire it once, and not over-fire it, and get very good results, but if I want to repeat it, the first thing that happens is an opaque mass, and it isn't worth picking up. It will not stand repeated re-heatings. I have been thirty-eight years in the business, and cannot use to-day successfully the bodies put on the market. I have to grind up old teeth when I want the proper results. I visited White and Justi and others, but they would not sell me

a pound of body for my own sake. They wanted to sell me a little bit of picayune stuff they made and don't know how to use. I will show you how to make bodies out of their regular stock teeth to beat anything they have produced up to the present stage of the art. I have said the usual environment of decay is between the teeth, and have in my son's mouth an example of the difference between the old and the new method. When he was a boy it was difficult to constantly remind him to attend to his teeth. I finally rescued his teeth, and succeeded in saving them, although there was a persistent tendency for the molars to decay; they were too close together. His incisors are as beautiful as anything you ever saw, because they are these wedge-shaped teeth; they touch exactly at the points and they are narrower at the gums, and the ferments would not stay in the wider interstitial spaces, and they have not decayed. That is the only reason why they have not. Take the case of teeth like these I have here, Chart 11. Notice the little bit of enamel that I have to remove from the tooth. This is a reproduction of a case that I capped with enamel about four years ago. It is all enamel (P), no metal whatever. The enamel was removed to just below the festoons of the gum without irritation. I cut it somewhat short and then formed a shoulder between the teeth where the usual environments of decay intervene, keeping enough of the original enamel so as not to destroy the union of the crusta-petrosa of the root. Let the enamel on these parts remain normal and you have made a splendid result. When you form a thin metal hood (referring to chart) and swedge it down at right angles, the result is a circumscribed ledge or corrugated groove, and that prevents the matrix from warping and makes an elegant joint at the bottom. The practice of making a great many of my matrices corrugated is to stiffen them, like corrugated iron. The usual environment of decay is on the labial and proximate surface; the tongue washes the rest. In all my years of work of this kind I have never seen a tooth decay where the tongue kept washing it. This is characteristic of classes of work that I look upon as being especially suitable for enamelling (referring to charts 11 and 24) where teeth have been filled, in common parlance, nearly to death, and yet have maintained their pulps. If it is a hard tooth with a short stub, like these in the charts, I put an entire hood on, because, being short, it is easy to do it. One of my confreres gave illustrations of great, long hoods put on teeth. He thought it was a good idea. I have never had to do that in my practice; in fact, you seldom find it. When teeth need a hood they are generally short, and sometimes you are a little afraid you do not get grip enough to trust to cement alone on such short stubs, but I have hundreds of them in use after seventeen and eighteen years. If the mechanical form is all right and a nice adaptation is obtained, the cement, especially on

normal tooth structure, will do the rest. It is wonderful how they stay on normal tooth structure, as compared with the abnormal. I have here illustrated rather a long stub, and from a specimen in my hand demonstrated that making samples in the laboratory is not productive of as correct results as operations in the mouth. You can form a very thin matrix every time without splitting it or without warping it if not projected to far down on the lingual surface; but if you undertake to put the matrix, as represented here, and cut a groove too close to the cervical border of the tooth, it is a complication and unnecessary. If you make what I call an overlap facing all such difficulties are avoided. In four years' use of facings they have proved to be the very pinnacle of success (referring to chart P). Why? Because if you bevel towards the interior—that is, lingual—side, so that the 3-4 hood hooks over and dovetails a little, and leave 3-4 of the lingual in its normal condition, that star is put there (referring to chart) to indicate that if the pulp should die I would never have to remove the artificial portion, any more than on a sound tooth, and I can treat without breaking down my former work, while if you carry it down here, as illustrated by some of my confreres, you would have to grind a hole through your veneer and have a clumsy result. You can cover in the overlap facing, or 3-4 hood all the usual environment of decay. This has been exhibited, and is from an actual case in practice. See *Dental Cosmos*, August, 1903. It was adjusted a year previous. I am never in a hurry to be too sure. When I found the work in elegant condition at the end of a year, it then appeared in the *Cosmos*. There is very little pain in preparing the defective tooth, and by putting more bulk of porcelain between the teeth you get translucency without opacity, and you don't have any dirty joints; while in the case of an inlay, in six months or a year the patient says, "I don't like that patch on my tooth—looks like a piece of putty." I have had them tell me that dozens of times. After I had invented the inlay and practiced the art for two years I said I would change my tactics by covering up with entire hoods; or I would go on filling with gold. That happened eighteen years ago. I do not mean to infer not to use inlays. There are plenty of places where there is nothing better, and I shall continue to use them. I have been asked hundreds of times: "Doctor, what would you do with those sensitive teeth?" I hunted around here until I found a sensitive one for Dr. Zinkan, and went at it with a large amount of confidence, told him it would not hurt very much, and he will tell you why. In my long practice I have made some discoveries. I find by cutting crosses in the enamel that generally a tooth is not very sensitive so far down on the incising surface. It is very sensitive right here, and here (indicating on chart). I commenced and cut first this way (indicating vertical lines), and

you will find, just as soon as you commence reaching that spot here (indicating), they will jump. You must form the habit, when your patient jumps a little, of stopping and letting him take two breaths. You all know it is hard to stand constant pain, but you can stand pretty bad pain suddenly if you get through with it quickly. Give your patient a chance to rebound, and by taking time, conversing with your patient pleasantly, tell him now, "Rest; rinse your mouth," and take very sharp, thin wheels. Never take a thick wheel. As soon as a wheel loses its keen edge, throw it away. Charge it up to your patient. Cutting the enamel proper is not a sensitive operation. As soon as the wheels penetrate and reach the dentine it does hurt. Finally, as soon as you get the cross grooves cut and chisel the scales off, the dentine becomes anesthetized from change of temperature. You are undressing it; it is getting cold; getting its clothing off. When you cut off the scales get a sharp chisel, and with a quick, sudden blow of a light-weight mallet scale one off and give your patient a chance to breathe, and then cut off another one, and another one, and finally, when you get them all off, you can take a small, sharp wheel burr—don't take a large burr. I have a rest that makes it like putting it in a turning-lathe. It is one of the greatest pain savers; I will show it to you. I am going to try and get all these tools manufactured in Toronto, so that they can be sold here. There are quite a number of instruments that are exceedingly valuable that you will have to have to get along with this work. This is the tool, and I will pass it around. (Showing.) There is a little shoulder here that raises the lip, and you rest that on the end of the tooth and press hard on the handles. The engine burrs are supported in the slots and at the side, and if you have a sharp burr let it run steadily. This scales off the dentine, and you will find it does not hurt. As soon as you strike these corners (referring to chart), and get them all cleaned off the tooth will be sufficiently chilled so that you can run the burr under the festoon of the gum, forming the circumscribed ledge, as shown in the illustration, causing but very little pain. It is a singular fact that when you once get the most of the enamel off a tooth it becomes chilled. It is anesthetized.

A VOICE—How do you get it off between the teeth?

DR. LAND—You can take this thin carborundum wheel and try to imitate malleting. Pain has a certain speed of travel. A man being shot with a bullet, the bullet will go through him and he will not feel it until a moment or two has elapsed; it passes through him suddenly; he hasn't had time for intense pain to travel. I fell down and nearly wrenched my shoulder out of joint; the first shock did not hurt; I got up and commenced to skate, and I didn't get more than half across the pond until I had to go home. It took an hour to get home on the car,

and the jarring upon getting off the car nearly stunned me with pain. With carborundum disks the circumscribed ledge can be made just as you see it here (No. 24), and finished by aid of the tool rest. There is one more thing I will show you, and then you can fire all the questions you like (Referring to chart 13). This is a little scheme that I found valuable in aggravated forms of abscess where you are not sure that you have cured it; no matter how careful the treatment. I form what I call a tube post made of platinum and iridium on a tapering piece, an instrument just the size of the post I want to use. Don't solder it together at all. After I form that tapered tube and have the narrow end go down into the root, I then take a platinum foil and bring it up to fit on the end of this, or what I think the length of the tube should be to go into the root, and I solder it there. Then I slide it into the root and mallet the platinum matrix. This takes an impression of the end. I make it in two sections, like this. I immediately commence to fire on the porcelain crown; put it in the furnace and form the cusps, as shown in this case, and when completed there is a tube through the crown penetrating into the root, so that I always have ready access to it in case of subsequent abscess or ulceration, so I can uncork it any time I like without disturbing the original piece of work. There are times when you are glad to have it open, and the patient is too. I have two or three ways of making teeth of this description. I promised Dr. Webster that I would treat each of them separately. I will give a series of illustrations and try to simplify it and show the practical method, so that one can have quite a variety of selections according to the case. Here is one of them that I have no doubt you will find exceedingly successful (Referring to upper part of chart 11). This illustration represents the first time that I ever tried to envelop teeth with porcelain, putting hoods on them twenty-two years ago, and the lady is wearing them in Chicago to-day. They are in perfect order. The next case is that of a young girl. I put on four jacket crowns. That was the time I used the metallic jacket crowns that were published in the *Independent Practitioner* in 1886. It was a year previous to that that I adjusted these four crowns on long tooth structures. She was fourteen years old, with frail teeth. The whole family had always lost them, and the best dentists in the city had never been able to save them with gold or anything else. I took the case in hand, and put on my own style of enamel-jacket crowns. I gave the clinic before the Michigan State Dental Society, and that was the time I had the row. I was enthusiastic enough to inform the public that I had made a great improvement. So a newspaper man wrote it up. I thought I was doing a good thing for the public. And I guess I did, for it got around after a while. That is one of the cases where seventeen years after-

wards I took off the jacket crowns and found the pulps alive and the cements wholesome. That cured me as to any doubts as to the durability of cements. After removing the old caps I readjusted with the overlapped facings and entire hoods. This included the four front teeth. So that I can produce the same patient with the teeth recovered twenty-one years afterward. Now I am like Rip van Winkle and have come back again. I guess that is all now, and I am ready to hear what you have to say.

A VOICE—What do you fill that hole with?

DR. LAND—Gutta-percha; I forgot to speak of that. It is very easily removed.

DEAN WILLMOTT—Have you a sample of the hood that you can pass around?

DR. LAND—Yes (Producing tooth with hood).

DEAN WILLMOTT—These teeth marked 1 and 2 on chart 24 are prepared for a hood?

DR. LAND—Yes; I have never yet put in the mouth one as long as that. (No. Chart P.) After I went into practice I found this to be the average result, a shorter stub. (No. 2, chart No. 24.) There is what I call a 3-4 hood (Showing).

DEAN WILLMOTT—Some member of the Society is anxious that you should go on from here (chart 11) and get into this shape (No. 2, chart 24), and tell them how you make that hood.

DR. LAND (Making diagrams on blackboard)—It is very difficult for me to demonstrate the performance of burnishing a piece of platinum on a tooth stump. I am holding here in my hand a series of impression cups for the various teeth in the head. I think when I get them on the market it will take from sixteen to twenty to make a complete set. They are made from very thin German silver and German silver wire. I use the common white gutta-percha, which comes in sheets, using the impression cups. I then wrap a gutta-percha collar around it. I have a cast of an impression here in metal that fuses at about 180 degrees of temperature. Here is one where I have taken the impression of a cavity in the upper bi-cuspid. Simply anchor the tooth on a stub as short as that (Showing). I will pass that around, and I will pass with it a case suitable to put a molar hood over an abutment of a bridge made from heavy platinum and iridium wire. I have all sizes for every tooth in the head, and when I put it on the top of one of these stubs pretty warm, it never burns. People never complained of that; even the most sensitive teeth. I punch it down when it takes an impression, and then a collar is put around it and it is cooled in water. All these metals that cool slowly get dull, but if you suddenly cool them before they crystallize you hold them as they were when they were in their molten condition. These metals are made of tin, bismuth and lead. In order to keep it constantly homo-

geneous, and not allow one to separate from the other, keep shaking it, and as soon as it is in exactly the right condition dump it quickly. In that way you will not get the metals to separate. If you let them cool, the heaviest will have a tendency to go to the bottom. I shall make arrangements to have it put on the market, and I will probably have it made here in Toronto—give it to somebody so that it can be sold. After I get the cast of the stub and reproduce it in metal, I then put the die in a vise, and I have here a platinum burnisher which is the most useful known. It is made of platinum-iridium and German silver wire. It is my own make. The reason I use platinum-iridium wire for all these points is that it doesn't leave any trace on the metal matrix. Platinum will not hurt platinum, but the baser metals all hurt it. For instance: if you get a little bit of this die matrix rubbed in your platinum it will melt a hole through it. When I put the matrix in the vise I can deliberately sit down and take the pains to burnish it on and burnish the correct angles out on the die.

A VOICE—What thickness of platinum?

DR. LAND—I use the 800th and the 600th. Probably the 800th. The 1,000th is a little too thin, and you are apt to tear it. There is no harm in using thick platinum, because if these edges are bevelled the way I showed (Sketching), and it rides on this circumscribed ledge, all you have to do is to cut a little off there and let it slide down a little further. After the matrix is burnished to the metal die it is transferred to the mouth and corrected by burnishing on the natural stub. Then the body is built upon the finished matrix so as to represent an approximate form of the normal tooth (Sketching). At this stage it receives its first firing and is glazed to translucency. Always glaze your bodies to reach translucency. If you don't you will have opacity. Vitrify them pretty well; just enough to get a fairly good glaze on them so that you can begin to see through them. I do that to establish a rigidity to the top that won't warp. In the second firing I correct error by putting it on the tooth to see that it is not out of shape. Burnish it down again, and add a little more body to get it a little closer. Then I commence to build out the next piece like this (Showing), and then I begin to look for my colors. If it is a little off color I use another grade, gradually blending the tints as the root is approached. After that I carry it down a little closer; finally I get down to the bottom, and then it begins to look like a tooth. This is the third firing. I may have the color pretty close. If I want to get it a little dark here (Indicating), and white at the point, I put it thicker here (Indicating towards the root), and cut that off and make it wider all the way through. If you want white at the point and a little deeper, run it all the way through. Or if you don't want it so much, put it on a little thicker. Finally I get the tooth by repeated firings and watching the edge.

The veneers that are manufactured by the dental manufacturers are so crude, that is, in their form, that there is no economy of space in them. To carve teeth of your own you get space, and this is the ideal form to prevent decay. The teeth come in close contact at the incising edge. This is nature's design to keep teeth from decay.

A VOICE—How do you support that porcelain when in the furnace?

DR. LAND—I get a very thin piece of platinum and lay it on top of a fire-brick slab, and sometimes I get a little trough and lay it on that to keep it off the fire-brick and clean. If there is anything in this world you want to keep clean and keep dirt and flux away from, it is porcelain. I don't know anything so sensitive to dirt as porcelain. You must watch it closely and rest it on a clean surface. If you put it on dirt you will find a hole in it, and if you grind it you will get a piece of carborundum in it. I will tell you how to get rid of the carborundum. Never put a tooth, a vitrified piece of porcelain, back in the furnace after you have ground it, until you have washed it and fired it again, because if you do there will be a little bit of dirt, and you will have three or four nasty little bubbles on the front of the tooth. If you besmear a plate-glass window you cannot see through it, because light is refracted. A large amount of flux put in porcelain makes it opaque and not translucent. The less flux you have in a body the more translucent it will be. I have said in my article that a true dental porcelain is a porcelain that would hold its form both before and after fusing; that is, I want a porcelain I can just mix with water and build up in my hand and then put it through the fire and not get it out of shape. So I have a little specimen here. Whenever you want to test the quality of a porcelain body, just sit and try to make one like it, and if you cannot do it with the porcelain, throw the porcelain away. You could do it with this in about three or four attempts, if you are a good dentist. I have here another specimen of the power of contour before and after fusing. Nothing used here but water and a camel's hair pencil. I have been asked how long I leave my porcelain to cool. Probably a high-grade porcelain, unless it is quite a large molar, can be taken out and thrown all over the room, barring getting dirty, and would never crack. A low grade will crack as soon as you take it out and cool it. I have made crowns out of pure silica under the oxyhydrogen blowpipe, and heated them red-hot and thrown them in the water, and you cannot crack them. With porcelain, if you could reach the fusing point of silica, you could throw it in water. To devitrify most of our porcelains we can throw them in water, but when the flux is all out and it is reduced to pure silica you can throw it in water and it does not break. All of our clays are silicates of aluminum, and the less flux there is in them the less

liable they are to crack. If you want to be careful with the porcelain that is easy to fracture or crack, put it in the muffle on a comparatively thick piece of fire-brick. Take it out in the open air, leave it on the brick and let it cool, and it will never crack, because the brick is a non-conductor and holds the heat long enough to temper any ordinary piece. Do not lay it on anything that will absorb the heat from it. A substance generally throws away heat about as fast as it takes it. Different metals in different clays will do the same thing. They receive and give away about the same proportion. So all of our fire-brick, fire-clays, are slow to give up heat, and with small pieces like that there is no danger whatever of cracking if you take them out immediately.

A VOICE—Do you have any difficulty in getting the platinum out?

DR. LAND—No. In high-grade bodies it is much easier to get the platinum out than in the low-grade. For instance, I can take a Jenkins body and you can pull it clear out of the edge and it won't shrink, but the high-grade bodies will shrink to themselves again. You can take a Jenkins body, and bring it out to the edge of a round disk, and if you do not over-fire it it will stay there. That is one of the deceiving actions that will make you think the Jenkins body does not shrink. But if you took it away from platinum it would all roll up in a ball and roll to itself. With those substances that have more adhesion than it has, it will stay, but high-grade bodies have a fusing point so near to the fusing point of platinum that it is more apt to pull your matrix out of shape. This is the reason why gold makes a closer adaptation, because the low-fusing body stays with the gold. The gold is more tenacious than the bodies are, and it is softer, and you can send it home better. If I want to fire anything on gold I use 36 gold for my work, because it is a very nice thickness and not so easy to punch a hole through.

DEAN WILLMOTT—If Dr. Land has explained this crown to your satisfaction, we would like to hear a few words from Dr. Abbott.

DR. LAND—I have not been able to get the proper variety of color. I am somewhat handicapped, as I said before. I had been to see Justi and White. Originally the Wilmington people did make the colors right. I had about ten fixed varieties, and Dr. Capon got some of those old bodies, and I have not been able to get a dental manufacturer to follow my directions since. The commercial attitude of the manufacturers is so great, they are making things to sell.

DEAN WILLMOTT—They want more than one customer.

DR. LAND—Yes, and they want to get all they can out of him, and they are commercializing the art and destroying it. As I said to White, "Why don't you make your teeth of glass?"

Why don't you come along with glass teeth and tell us to buy glass teeth?" We have more right to demand a high-grade body to-day than White or anybody else. If I could raise it 600 degrees higher, and could give you a furnace that would fuse it, I would be with you, and you would follow me.

DR. ABBOTT—How do you get those colors?

DR. LAND—You can buy the pinless teeth; buy the molars and bi-cuspid. Buy them as white as you can, and as yellow as you can, and as blue as you can, and if you are careful you can get pretty near the color you want. If I get cornered I put on paint. I did that with the Doctor's to-day. I could have made it better if I had some of my old translucent bodies the Wilmington folks had; the nicest bodies I ever saw.

DR. ABBOTT—If it is not too late I am sure many of us would like to hear the Doctor discuss some of his methods in porcelain bridgework. He has an excellent scheme of constructing an hygienic porcelain bridge, and if it is not imposing on you, I am sure the rest of the men would be glad to hear it.

DR. LAND—I would be handicapped in this without models of better work than I have shown you, and more practical. I will tell you what is coming. I have a combination of amalgam and gutta-percha, like putty. I pack it into a tooth, then drive a peg and hook combined into it and let it harden, and that forms an abutment for a removable bridge. Any old root can be utilized, and use no cement, or both combined. As soon as it is hardened you can put a high finish on the amalgam and it will keep its color for years. Make a tube that fits over the hook, and then you can vulcanize teeth on the tubes, which when completed is a substantially removable bridge. It is as easy and cheap as falling off a log. Then I have another way of anchoring an approximately formed porcelain molar or bi-cuspid that is pretty near its proper size in the root, and putting a short gold cap on the top of them and getting rid of the irritating tendency. I make bridges of short metal caps that do not come in too close contact with gum tissue, principally on round piers, and then form a tube matrix to fit over the piers, and make a tube tooth to fit over the posts. The whole system of bridgework should be established on individual posts; the more you can practice making the individual tooth the more natural they are, and the easier they are to repair in case of accident. I have arrived at that stage of the art where I very seldom have to make a long, continuous bridge, which is generally more unsanitary than the teeth where you have the open spaces. Since the subject has come up, I will tell you what my experience has been in regard to platinum bridgework. It is a very difficult thing to make, and unless a man has had considerable experience and made a whole lot of blunders, he is apt to do what I did, *i.e.*, learn it by hard work and at a great expense. The more pla-

tinum you have covered with a vitreous mass, and the heavier the platinum, the poorer the bridge that you fire on it. If you make a post and cement it on it is four times stronger than if you fire it on, because the firing bursts the porcelain. There are hundreds of men making bridges that are beautiful to look at, but they are like the cat—they come back every time. They are very expensive, and getting more expensive all the time, and very troublesome. I have adopted the post bridge idea. They are cheaper and stronger. The porcelain itself is stronger. The weakest part of any bridge is the porcelain. A crown in a tube form is always stronger than a crown baked on a pin. It is probably three times as strong when it is cemented on a pin. I make a tube matrix and cement these all after the bridge foundation is made, and if they break it is easy to put them on again. At my clinic some of you have seen how I produce foundation forms out of mouldable porcelain. All you have to do is to solder a few metal cups or posts on a bar or wire. I will give you a set of models in which you can make all forms of teeth. If I sell you body for \$1.50 per ounce you can make all your teeth for five or ten cents, and not pay thirty-five cents for them. It is a singular fact that you can go to the dental manufacturer to-day and buy a hollow tooth for ten cents or six cents; and simply because they put it in a little different form and sell a five-cent pin with it, plus somebody's cognomen, they charge you thirty-five cents for the porcelain that costs no more to manufacture than the six-cent molar in a combination set of teeth. I do not see the logic of paying 480 per cent. above the retail price for substantially the same tooth, differing but slightly in form. We used to buy lots of old pivot teeth for six cents and ten cents. It does not take any more porcelain to-day to make a tooth, and it does not cost any more to put different forms of holes in the ends of them, but somehow we have to pay five cents for a nickel pin, and thirty-five cents for six cents' worth of porcelain. They can take these facts and publish them if they will. Another point I have discovered in baking is that there are a great many men who have been advocating the baking of porcelain in a kind of cup. I suppose you have all seen the glass that looks like frosted work on the windows, and you never see two designs exactly the same. You may know how it is made, and you may not, but I will tell you how to make it. Take about a quarter of an inch of glue and put it all over the glass and let it dry, and the adhesion the glue has for the glass is so great that it rips the design off when it shrinks. That is what takes place when you bake porcelain on a solid piece of platinum. When the platinum cools the porcelain is ripped off. The difference between the shrinkage of the platinum and the porcelain is the cause. That is the reason why I am using the thin tube matrix, because that is too thin to make that difference in shrink-

age, and then when you cement them over a post they are a great deal stronger and better, and you can always find your post to reset them when an accident happens. You save your patient a whole lot of expense and trouble and irritation.

DEAN WILLMOTT—That is nearly coming down to making bridges of Davis' crowns.

DR. LAND—I have made bridges of the Diatoric crown. There is one thing I have forgotten to tell you; that is the media. I will take the diatoric teeth with the holes in them, and without any further ceremony bake the media inside, and on the bottom cement them on posts. I have some of these which have been in use four years. Another method I tried that has been successful, although I do not know how practical it is going to be as a permanent device, is one which I invented in 1891 for the amalgamation of porcelain to the natural teeth and to artificial dentures. This was the principle of my success: I would fuse a biscuited surface on the contact side of a higher fusing body than that of which the tooth was made, but it would cling to it, that is, it would be rough; it would be fired on the end of the tooth. I then take the ordinary china decorator's liquid gold and paint it on the biscuited surface, and fire that on as they do in china decorating; then I take amalgam and put it down in the root and adjust that crown to it. If it were a bridge I would put it over the post and adapt the amalgam to a gold coat, and would have an amalgamated bridge that I could polish before it was put in. The tests I have made on amalgamating with gold and biscuited surfaces have sustained a resistance equal to 150 pounds to the square inch. I have specimens now that I have exhibited before the Connecticut Valley Dental Association in 1888-9 that are still holding in the same way. But I have found cements cleaner, and if they wear out a little put in another plug. (Applause.)

DEAN WILLMOTT—Gentlemen, it is a quarter to ten o'clock, but if anyone has any observations to make we will be very glad to hear them for a few minutes. The intention of the officers of the Society was to adjourn about half-past nine, and not later, certainly, than ten. We would be glad to hear from Dr. McLean; he is one of our porcelain men.

DR. McLEAN—I do not know that I can add anything to this. It just seemed funny that to-day I was working for a patient who had several inlays in the incisor teeth, and he had a central that was left with two gold fillings, two proximate fillings. He came to me with this expression: "Can you better the color and shadings that I have in those, for if not I do not want any more of them. They look all right in certain lights and certain directions, but in other lights and other directions they look like shadows and patches." It would seem funny that I would come here to-night and hear of a way to improve

that central. He said to me: "If you can do it with this central, you can tear the others all to pieces and do it over again." This work was done by an expert, and I did not feel confident to say I could better them, for in some lights the inlays are certainly good, but in other lights the shadows from the two proximate fillings in the cuspid and the lateral did not have any tendency to match at all. It seems to me that that central is a good case just to try these new hood crowns. The Doctor does not mention what I wanted to know about the high fusing porcelain. Is it necessary to temper them at all in cooling?

DR. LAND—You can be very careless with them. If you watched me while at work, you would think I was very careless. I could be careless enough to check them by putting them on a piece of iron, but when you fire them on fire-clay it keeps them from checking.

DR. McLEAN—What do you lift them with?

DR. LAND—I have a little pair of German silver tongs: better than anything I have seen around here. About that long (Indicating about a foot), and have asbestos-wrapped handles, so I do not burn my hands. I pick the fire-brick slab out with them and it doesn't slip.

DR. McLEAN—Are the ends of the tongs covered with asbestos?

DR. LAND—Just the handles.

DR. McLEAN—You put the ends right to the porcelain?

DR. LAND—Yes; with a low-grade porcelain it might do to grip the fire-brick slab. The fire-brick is a tempering medium. You can be careless with that. If you were taking an extra large section of high-grade porcelain, and took it out suddenly into the open air it would fly to pieces.

DR. McLEAN—I always had the idea, the larger the piece of porcelain, the more danger in checking it.

DR. LAND—That is a well-known fact in all vitreous masses. The same as continuous gum work. If I were to take continuous gum work and set it out in the open air, unless I had a very large brick slab to retain the heat it would break sure. In The pottery business where they make large bowls with heavy bottoms, if they took one out it would fly to pieces. If it were made very thin and uniformly large it would not break so easily, because you would not have it in large, uneven masses. It is the outside that shrinks before the interior can, and it is the difference in the shrinkage and expansion of the varying thicknesses of vitreous masses that makes them break.

DR. McLEAN—Can you get the results from the porcelains that are put on the market?

DR. LAND—Oh, no. I would prefer to be a farmer rather than use them.

DR. McLEAN—The great objection I can see to the Doctor's

work is getting the right shade, and that, after all, is the important thing in porcelain work.

DR. LAND—I would advise all amateurs in porcelain work to make an attempt to carve their own piece and get the practical features of proper manipulation. It does not take long to become an expert in fine shades, and when you cannot do that, get a tooth, grind it to a thin facing which carries the shade, and stick it on. To be a carver is an expert operation, and you can crawl out of it every time very favorably and very well with a veneer well selected; but stick to your carving, it will be the best and easiest method in the end.

DR. McLAUGHLIN—There is one point I am not very clear on, Dr. Land, and that is, putting a hood on an upper incisor, for example. Does he cut the shoulder under the festoon of the gum, as a rule, or leave the shoulder free from the gum?

DR. LAND—The festoon of the gum is very much deeper; hangs over the union of the tissue next the crest where the two join together; hangs over that quite a distance, and in all wholesome teeth you can invariably hide the joint without touching the tissue. I did not even raise the skin on a joint I fixed to-day.

DR. McLAUGHLIN—The joint is not visible?

DR. LAND—No, I would not put them in. I do not care. I would rather have the joint a little above the gum, on the average bi-cuspid or molar. A dentist seems to think, if he puts on a gold cap and cannot see the joint he has done something. He has done a whole lot of mischief. Do not be afraid to look at your joints. Whether it is gold or porcelain or anything else, keep it in sight on the posterior teeth.

DR. SPALDING—A few years ago a flutter was felt for cement media, and I think there are about as many results from the use of that as dentists who use it. I would like to hear Dr. Land explain how he produces that effect.

DR. LAND—I am glad you brought that out, because without it I would be only a farmer. It is the greatest improvement of the whole business. It is singular I forgot about it. I will tell you what cement media is. I have put on a great many crowns of porcelain, and I found many times that the porcelain would let go and the cement hang on to the tooth. I have seen that so many times that it occurred to me that if I could find a substance that would stick as tight to the porcelain as to the tooth I would be in clover. I fired some oxide of zinc on porcelain. I tried it with cement as it was, and it would not stick very well. I then commenced scientifically to investigate how I could make it stick. I soon found a substance that would cause the oxide of zinc, which all these things are made of, to flux just enough to hitch on to the porcelain and not destroy its cement properties. So when I gave you the media to fire on at a certain temperature it was made exactly to hitch on the porcelain and not

destroy the cement properties. The result is, when you stick your cement to the tooth structure and know it is sticking to the veneer, you can feel doubly safe, as far as the porcelain is concerned, because you literally have a chemical adhesion with the cement and the porcelain. It has fused itself into the porcelain. If you find you have not obtained as good use with one dose try a second, and fire that on with the gold test, and the first becomes the flux for the second. The little glass bead is intended for the lower fusing porcelain. They become so denominated because the first was a high fusing one. I first made the high one, then I made a lower one, but I found it difficult to make it low enough with Jenkins bodies without destroying the cement properties. It made it almost useless and took the color out, so I have remained silent on that. The higher fusing the body, the higher and stronger you can make cement media. High fusing bodies will hitch on the high-grade porcelain at the fusing point of gold, and that is why I take that as my criterion. You cannot boil off this class of cement. If you take the hydro-fluoric acid method, which produces the so-called etching on the surface, and put a cement on that, and put it in water, it will drop off in thirty minutes. Oxide of zinc at high temperature forms a flux in itself. I have manufactured cements myself and put them in fire-brick muffles, and if I forgot them I found the muffle one lump, a homogeneous mass. You have now the explanation of what cement media is. The cases published in the *Cosmos* had perfectly flat veneers and crowns as a test for the cement media, and consisted in one instance of a rubber tooth ground down to a thin veneer, and simply a groove put in front of a normal tooth structure not more than a twentieth part of an inch thick. They were all illustrated in the *Cosmos*, and showed the overlap and entire tooth in the one mouth. Seven of them have been tested three years. I have twenty or thirty where the facings came off the old jacket crowns. One man came to me who had five broken off. He was in a hurry; he said, "I want to go to Colorado. I wish you could fix this till I come back next week." He did not come back until six months ago. It is three years and a half now, and they have not come off yet.

DR. TROTTER—I am sure we have all listened to Dr. Land's excellent address, and we owe him a debt of gratitude for the trouble he has taken, and I have much pleasure in moving a hearty vote of thanks.

DR. EATON—I have much pleasure in seconding that.
Motion carried with applause.

DEAN WILLMOTT—Dr. Land, I have very much pleasure in presenting to you this enthusiastic appreciation of the services which you have rendered.

DR. LAND—Thank you; I thoroughly appreciate this. As

I have often said to my friends, when they said they thought they were abusing me, the very fact that I have been able to rehabilitate badly decayed teeth for several girls at fourteen, fifteen, and sixteen years of age, and enabled them to marry rich men, all on account of their teeth, I could not be happier if I were worth a million dollars; and if I can impart this knowledge to my fellow practitioners it is better than being worth a million. I thank you very much for the kind reception I have received here, and being a "Canuck," I feel still happier.

Selections

SOME NEW FEATURES IN OPERATIVE WORK.

BY R. B. TULLER, D.D.S.

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Among the things of recent introduction in operative and prosthetic work, is moldable procelain; which means that the substance is mixed like cement, and that it has some of the properties of cement, and that it may be first molded to the shape desired, or approximating it, if done quickly, when crystalization speedily follows, which acts, of course, to retain the shape as hardened cement or plaster would. But, being a porcelain material, it may now be fired in the furnace, with comparatively little shrinkage and little change of form.

It, however, lacks translucency, but has a very desirable property over translucent procelain, and that is strength and durability—a toughness of quality, so to speak, which, in a measure, is like tough, hard vulcanite, and yet lacking in the resiliency of hard rubber.

It fuses at about 1800 degrees F. To fuse it, or bring it to a high glaze is to over-do it, losing some of its best qualities. If under-done, it will be shown by a drop of water, which it absorbs.

After it has been molded to approximate shape and hardened and before baking, it may be carved very much as hard plaster may be; but to compensate for the shrinkage in firing, the design, if of some bulk, should be left a very little larger than desired for the finished article. If any change in form is desired after baking, it may be ground with stones and disks. If a glaze is desired, it may be had by coating it with low fusing enamel body and fusing that, but it may be polished very well by the use of disks (as would be done with porcelain) and answer every purpose in some cases, without baking on an enamel coating. The enamelling is mostly for appearance sake.

There are numerous cases where it may be employed to make a molar crown, whole or partial, to fit into a prepared pit, and certain inequalities of the root, obviating the use of pins running up into the roots; though pins *may* be baked into the material if desired. German silver wire will answer every purpose if pins are desired.

Inlays in molars may be made that will give satisfaction equal to anything that may be used, except the matter of matching tooth shades. Its color, however, is a gray that approaches, very closely, the color found in a large number of molars; and where not conspicuously exposed has a more aesthetic appearance surely than either gold, amalgam or anything but a good matched in porcelain. In exposed positions a proper shade of enamel fused on, as referred to above, makes matching up in many cases entirely satisfactory.

This moldable material is certainly of great value where strength is required, together with an appearance far better than gold or amalgam. While the usual porcelain has strength enough if there is bulk enough, there will often be a chipping of margins traversing an occlusal surface that sustain the strain of mastication; but this moldable porcelain will stand up in edge strength equal to amalgam, and, while not as good as gold for strength, it will rarely be found wanting if consistently employed.

Its value as a new adjunct to porcelain material is greatly appreciated in its use for making perfect joints and contact between ready-made porcelain crowns and the roots they may be selected to cover. No matter what the discrepancy, the space may be filled with moldable porcelain, and an absolute fit to the root obtained; so that when set with cement, subsequently, the joint can scarcely be detected; and the contour of the crown at the joining blends naturally to the shape of the root with no undesirable shoulders or overhanging margins. Taking a Logan incisor, for instance, the pin is fitted to the root canal in the usual way. The root is cut away, preferably, a little beyond the gum line. The crown may then be adjusted to the root so that the labial contact is fairly close, but with little regard to any space left lingually. When this is done and adjustment as regards adjoining teeth and proper alignment is completed, the mix of soft putty-like consistency of moldable porcelain is packed quickly around the pin in sufficient quantity to fill all open space, and the tooth pushed firmly to place and allowed to remain undisturbed a few moments until crystalization has taken place. To prevent the sticky mass adhering to the root, the latter should be smeared with vaseline or olive oil. In some cases the root should first be coated with thin sandarac varnish, that will harden quickly, and then oiled. This applies more particularly to roots where the shape to be fitted is irregular, which will be explained further along.

The moldable porcelain, having become hard, the tooth is now removed, when a perfect impression of the end of the root will be found in the substance. Now, with a sharp blade it may be trimmed to correspond to the outline of the tooth and the root indicated by the impression. It is now ready to bake, and should not be carried above 1800 degrees. The color in the furnace when at the desired temperature is a sort of canary yellow. To the novice in this particular art, some experimenting will very likely be necessary before the best results are attained.

When sufficiently cooled, the crown is again adjusted to the root, when it will most likely be found that the shrinking of the material in the furnace leaves some little discrepancies of fit. This is remedied by again oiling the root, mixing a very little more of the material, and not quite so stiff, as at first, and, smearing a layer around the pin as before, take another impress, allow to harden, remove, trim and bake as before. Or, if one chooses, this trimming may be omitted until after the bake, and the thing finished up with stones and disks. It will be found that a fine polished surface may be obtained, care being exercised, of course, not to infringe upon the surface that shows the exact impress and outline of the root.

The tooth now is ready to set in the usual way with either gutta percha, a method followed by many, or cement. The color of this material is in many cases not seriously objectionable if the joint is exposed—never so much so as the show of gold when that substance is used between crown and root.

In particular cases, if the line of joining must show for any reason, the exposed portion may be enamelled with low fusing porcelain to correspond with the shade of the teeth. Or where desired a pink gum enamel may be baked on to restore loss in that respect.

Moldable porcelain is particularly available to make large restorations in molars and sometimes bicuspid; to be set on the principle of an inlay. Reference is made to that class of broken-down teeth bolstered up usually with big contour amalgam fillings, or given over to the gold crown as the only salvation. About the only difference in preparing such a tooth for amalgam and this moldable material, is that for amalgam some undercut anchorage is necessary to retain it, while with this moldable substance the preparation must be so that an impression may be withdrawn from it without distortion, same as for an inlay.

Usually an impression is the better method of procedure; which means making a model to work by; but familiarity with the peculiarities of moldable porcelain, enables some operators to take the impression with the substance directly from the tooth, moisture being excluded. When this is done and there are pits and projections to be taken, it will be found essential that the tooth

be first varnished with thin, quick hardening varnish, allowed to dry, and then be oiled with vaseline. The same thing should be done with a model, if that procedure is to be followed. And from the model, after the first bake and an approximate form is produced, we often go to the tooth for the final impression, using the form smeared with a fresh mix of the material, as in taking a final impression of a root to be crowned, as before described.

With this approximate form, just alluded to, if not too full occlusally a bite may be taken by putting on a little impression wax where the occluding teeth are to be shown, and articulating plaster models run up as is usually done, when the form may be completed to full and proper contour by adding new material in one place and grinding away at another, if need be. Enamelling may be done, if desired, as heretofore stated. When finished it is set as an inlay with cement.

It is generally understood that gold inlays are sometimes made because of their strength in comparatively small parts that are used to hook over into some occlusal depression. While moldable porcelain is not as strong as gold, needless to say, it is so much stronger than the usual porcelain, that it may be extended into certain arms and projections to give clutch and hold, provided a proportionate bulk is used. That is to say, a channel must be deeper and wider for these extensions in this substance than for gold; but where it would be folly to use the usual glass like porcelain because it would too readily fracture.

Again, this moldable substance may be used to make a solid crown with the facings used in gold bridge work; and a porcelain bridge may be made stronger by the use of this material for backing, after teeth are attached to the skeleton, than would be the case with an all translucent porcelain backing.

There are many instances, too, where nearly all the varieties of porcelain molar and bicuspid crowns may be used in connection with this material in place of gold, to fill out and make the root connection.

The use of a Logan crown was given as an instance to describe the method of fitting an incisor, but all these removable pin teeth may be used quite as well, by first adjusting the crown in the usual way, and then using a little of this moldable substance to fasten pin in crown (if it perchance is a very loose-fitting pin, like the Davis', Justi's and White's) as well as for making the fit to the root.

Rubber and diatoric molars and bicuspid may also be used with moldable porcelain in making restorations where the anchorage in root is good; and pins *may be* adjusted in roots, withdrawn with the impression and thus eventually imbedded in the moldable material when baked. In such a case, it goes without saying that pins, especially in upper molars, must be so adjusted that they

will come away with the impress, and go to place without trouble when the crown is set. It is entirely unnecessary for pins or posts to go a long way into the roots of the teeth in any case, so long as they have a firm contact for such distance as they do go. In upper molars the roots usually stand at such angles in relation to the axial line that it would be often impossible to set a pin in each root and have the three draw away with an impression. It is quite sufficient often to have one strong pin lodged in the palatal root and not too rigidly, but in a large number of cases where there is left something of a pulp chamber, this pit properly shaped, may be depended upon to safely hold a full-sized crown. Pins may be used to advantage in some cases to extend into the deep, funnel-shaped orifices of the roots held in place by a bit of wax slightly enough so that they will come away with the impression.

In place of varnish, recommended by the producers, to first coat over cavities that an impress is to be made of, the writer has made use of melted paraffine, hot enough to be painted upon any surface in a thin layer, sometimes warming the cavity with hot air to insure only a thin layer being deposited. This hardens at once and oiling is unnecessary.

Drs. Magee, St. John; Thompson, Halifax, and Oliver, of Almonte, Ont., are assisting to get up a historical number of this journal. Dr. Hermiston is getting up the matter for publication.

It might be worth while to aim to educate the public so that there would be fewer people willing to take chances in dental offices conducted by laymen with unsuccessful dentists as operators.

Dominion Dental Journal

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*All Communications relating to the Business Department of the Journal must be addressed to
THE NESBITT PUBLISHING COMPANY, Limited, 44 Adelaide Street West, Toronto, Canada.*

VOL. XIX

TORONTO, JANUARY, 1907.

No. 1.

A SPECIAL MEETING

The Board of Directors of the Royal College of Dental Surgeons will hold a special meeting January 29th. There will come before that meeting a few important questions. Dentistry in Ontario will be practiced before long as a profession and as a trade or business. Students as they leave college will choose to either begin practice as professional gentlemen or as hirelings in a business conducted by someone whose sole object is to hire someone who will work the public for all the money he can get. The man who owns and conducts the business will demand of his hireling whatever methods of practice will give the greatest income. This tendency of dentistry in Ontario will be discussed by the Board. It will also be discussed at a meeting of the Toronto Dental Society, when the members of the Board will be invited to take dinner with them.

The relation of the School of Dentistry to the University of Toronto will be discussed at the dinner.

Another subject of importance to come before this meeting of the Board is a proposed extension of the present college building. Plans are to be submitted for consideration.

A practitioner's course must be considered because we need it.

The Board should consider the advisability of doing something to educate the public in matters of dentistry. If the public knew enough about dentistry to be able to judge of a dentist's capabilities there would be few of them deceived by large advertisements. The quack lives upon ignorance. Let us set out to educate the public in such a way as will enable them to know the difference between an honest, clean, capable dentist and a dirty bungler. This is our duty. Such work would do more to put the incompetent out of dentistry than legislation will ever do. The public will demand a standard which cannot be successfully attained by hirelings. The government has said it would help in such an educational work. Again we say, Shall we do it?

ARTICLES ON PORCELAIN ART.

With this issue we begin the publication of a series of articles on porcelain art, by Dr. C. H. Land, of Detroit. Dr. Land is the father of porcelain art as applied to dentistry. We present his picture in this issue, so that our readers may know the features of the man who has done so much for the artistic side of our profession. We hope within the next year or so to have printed the most valuable work Dr. Land has done in porcelain. When these articles are printed they will make the most complete volume on this subject ever published.

ONTARIO DENTAL SOCIETY, FEBRUARY 25, 26, 27, 1907

Monday—2 p.m., Registration. 3.00 p.m., President's address. 3.30 p.m., "Preparation of Cavities for Porcelain and Gold Inlays: Making of Gold Inlays," by C. N. Thompson, Chicago. Discussion, J. C. Trigger, St. Thomas; R. W. Cleary, Ottawa; C. K. Buel, Buffalo. 8.00 p.m., "Conduct of Dental Practice from the Standpoint of Economics." I. "Convenient Arrangement of Office and Equipment," Harold Clark, Toronto. Discussion, C. N. Abbott, London. II. "Business Relations of the Dentist," W. C. Trotter, Toronto. Discussion, Oliver Martin, Ottawa. III. "Assistants," A. A. S. Burns, Montreal. Discussion, Gordon McLean, Toronto, H. R. Abbott, London. "Has the Status of Cement Changed since the Introduction of the Silicate Cements?" by D. C. Smith, Stouffville. Discussion, D. H. McCoy, Buffalo. "Ethics," by G. M. Hermiston, Toronto. Discussion, C. A. Snell, Essex Centre.

About the 10th of February you will receive another notice similar to this one. The regular printed programme will not

be given out until the first day of the meeting. Members will buy single first-class tickets on the certificate plan.

W. E. WILLMOTT,
Chairman.

A. E. WEBSTER,
3 College Street,
Sec. Programme Com.

Obituary



W. M. FOSTER, L.D.S.

Dr. W. M. Foster, of Guelph, Ont., died on October 26th, 1906, of pulmonary hemorrhage, aged 64 years.

Dr. Foster was born in East Caledon, about sixteen miles from Brampton, Ont., where his grandparents, who were U. E. Loyalists, had settled about 1814. He went to the United States at the age of seventeen to engage in the lumbering business, afterwards returning to enter the office of Dr. Trotter,

Brampton. In 1869 he went to Guelph to study dentistry in the office of Trotter & Graham. He received his license in 1869 and took over the office of his preceptors, where he practised for thirty-eight years.

In 1877 he married Miss Laura Stephenson, of Guelph, who, with four sons and one daughter, survive him.

In 1893 he took as partner Dr. F. T. Coghlan, who remained with him until 1901, when the partnership was dissolved, and the firm of Foster & Foster was formed; the junior partner being his son, who had graduated in 1900.

A number of prominent dentists of Ontario owe their early training to Dr. Foster. Among those who had been students of his were Dr. A. M. Clark, Dr. Skinner, Dr. Elliott Holmes, Dr. F. T. Coghlan, Dr. J. P. Coghlan, Dr. Davidson, Dr. Parker, Dr. Tovell and Dr. Foster.

In 1904 he was appointed Examiner in Prosthetic Technique by the Board of Directors of the Royal College of Dental Surgeons; an appointment which did the Board and the profession credit, because Dr. Foster was admitted to be one of the most skilful prosthetists in Canada. Year after year he was sought after by dental societies to take part in the programme, but owing to his modest and reticent nature he never could be prevailed upon to accept. When he attended dental meetings he always had a coterie of friends who gained much from his companionship. By his personal refinement, integrity of purpose and skill in practice, he won for himself the honor and respect of a large number of personal friends.

In the death of Dr. Foster the dental profession has lost one of its most esteemed members—one who always practised his profession having before him the highest ideals.

MRS. ELLA BURR McMANUS.

Mrs. Ella Burr McManus, wife of Dr. James McManus, and daughter of the late A. E. Burr, died suddenly on Wednesday, at her home on Pratt Street.

Mrs. McManus was a woman of strong and noble character. Her loss will be deeply felt by all who knew her, especially by the members of her own family.

Her interest and assistance in various charitable societies, notably the Union for Home Work and the Humane Society, will not soon be forgotten.

She was especially gifted in the use of her pen, as shown in her letters, essays and her notes on social topics which have been published from time to time.

Dr. McManus has the deep sympathy of the dental profession in his bereavement.

Dominion Dental Journal

VOL. XIX.

TORONTO, FEBRUARY, 1907.

No. 2.

Original Communications

DENTAL EDUCATION—THE QUESTION OF CLOSER AFFILIATION WITH TORONTO UNIVERSITY.

—
BY HAROLD CLARKSON, D.D.S., TORONTO.

—
Read before the Toronto Dental Society.

In deciding what is the proper course to pursue in any sphere of life, it is necessary to consider

1. What are the ideals worth striving for?
2. How can these ideals be most easily attained?

Let us first consider the *ideals* that should be most prominent in the training of the dentist. J. S. Mill defines education as "the *culture* which each generation purposely gives to those who are to be its successors, in order to qualify them for at least keeping up and, if possible, for raising the improvement which has been attained."

In common with other branches of education, I fear we have forgotten the significance of that word culture, and in our efforts to be practical have given but scant consideration those subjects which give a wider vision and enable us to work more in harmony with the other benefactors of the race. The practical side has been developed more and more, and the methods of instruction in technique have been constantly improved, but the theoretical side of dental education has not been as complete or as well rounded as a glance at our curriculum would lead one to expect.

Would it not be wise to take a look at ourselves and see if we are really doing all that we set out to do, when the curriculum was formed? Or, are we just dabbling in histology, pathology and

the other subjects of pure science? Further than that, is it not time that the scope of the curriculum should be widened by the addition of other subjects not generally associated with the getting of a living and the full dinner-pail? I refer to biology and fuller courses in chemistry and physics.

An old maxim of the philologists and the advocates of language study for culture was: "The man who knows only one language knows no language." Max Müller adds: "The man who knows only one religion knows no religion." And we might add that the man who knows only one branch of science or one little specialty knows no specialty. All knowledge is correlated, and he who does not know those branches of knowledge closely related to that in which he wishes to specialize cannot understand the full meaning of the deductions drawn from his own experiments. It is only by comparison that the differences and the similarities are brought out. Biology and bio-chemistry are so closely allied to the various branches of medicine (of which dentistry is one) that they are regarded as essential for culture as well as for their practical applications. I believe, then, that the addition of these subjects to the dental curriculum is as needful for the ultimate success of the scientific and research side of dentistry as is the introduction of the various forms of manual training for the highest attainments in dental art.

But I imagine I hear protests from those who have given this subject some study that this would result in much overcrowding of the curriculum, that there is not time in the short college course to teach everything, that we would strengthen the theoretical teaching at the expense of the practical. I might remind you that sixteen years ago, when biology was first made a subject of the medical curriculum, some of the older schools were loud in their protests, and sneered at the subject as "frog-ology," which could be of no possible benefit to one whose business it would be to treat the human body. To-day where are its old traducers? Biology has justified its place in the medical course, not only by giving a better grasp of the underlying principles of practice and of the study of disease, but also because it has contributed directly to some of the most important discoveries of recent years, *e.g.*, the prevention of malaria and of yellow fever. So with physics and chemistry. To-day their value to a well-educated physician is so well recognized that in 1905 the Council of the Royal College of Surgeons of England considered the question of requiring chemistry, physics and biology to be taken before beginning the study of medicine (B. M. J., Oct. 27, 1906). Would any one say that medical teaching had lost anything in practical value? The medical curriculum is surely more elaborate and far-reaching than ours, and yet they have, at the risk of serious congestion, added to it such subjects of pure

science. Is the example of our older relation and namesake worth following? I think it is.

The alteration of the curriculum in the way I have suggested will, I believe, remove the stigma that seems to attach to dentistry, that she is not self-supporting, and that she has made few scientific discoveries; in fact, that a dental college is not of professional calibre at all, but only a good technical school, where the principles that have been worked out in other fields are by her applied much in the same way that expert tradesmen learn to use the discoveries of others.

Let me make this clear. I say: "Dentistry is not self-supporting." By this I mean that so incomplete and one-sided is the education afforded in dental colleges that she does not **PRODUCE** the men who are her acknowledged leaders and teachers. With few exceptions, all the important positions on the dental professoriate are filled by medical men. Some hold a degree in dentistry as well, but their advancement is by virtue of their medical training. That she has made few contributions to scientific knowledge many will dispute. If you run over the foremost names in the field of dental research, I think you will find most are those of medical men who have pursued their investigations by the aid of the methods learned in medical laboratories.

With such a grounding in the methods of scientific investigation as would be afforded by courses in biology, physics, histology, chemistry, pathology and experimental physiology, our students might be expected to carry on successfully some research in the various fields that lie waiting. Until some such changes are made in the curriculum it is idle to expect any good results from dental research work in our colleges, or any raising of the improvement which has been attained.

These are some of the ideals productive of culture, or of the scientific mind. Now what can be done to make more expert practitioners? I believe this is already fairly well looked after. The introduction of manual training into the public schools may assist greatly in developing skilled operators. There is one branch, however, that many of us feel is decidedly weak, and that is the clinical teaching in medicine and surgery. In this we are not entirely blameless, for is there not a strong undercurrent of opposition among our own profession to the full use of the infirmary as a great public charity which might furnish a much wider variety of clinical material than it does? Could not the field of oral surgery be illustrated somewhat more fully than it is? When we are sure we have exhausted our own resources it may be necessary to endeavor to secure some clinical teaching in a general hospital.

These are the *ideals*. Now, how are they to be achieved?

We have at our doors an institution doing this very work in a manner hardly surpassed on the continent. Slight modifica-

tions of the work with more stress on certain phases would make it quite suitable for dental students. Common sense would suggest that instead of duplicating expensive laboratories and apparatus and endeavoring to get together a new faculty of our own, instead of inviting the failures and disappointments incident to any new undertaking, we should avail ourselves of such facilities as are already in existence, even if these should cost much in self-denial and money.

The union must be a matter for mutual agreement. It must not be undertaken hastily, and the interests of dentistry must be as carefully safeguarded as are those of the shareholders of a sound financial corporation in any business amalgamation. I have no hesitation in saying the present affiliation with Toronto University has absolutely nothing to commend it. The advantage is solely to the University, which enjoys an annual revenue of some thousands of dollars, for which it gives little or no value. If a union can be brought about which will preserve in a measure our control of our own teachers and course of study and ensure efficient and intelligent teaching of our students, let us spare no effort to bring it about.

If, however, the Medical Faculty and the Senate fail to make proper provision for this work, then, in the words of the apostle, let us work out our own salvation with fear and trembling.

DISCUSSION.

DR. TROTTER.—The views expressed by the essayist are, in my opinion, the proper views in connection with this subject. There should be a distinct advantage to dentistry if the dental school were a department of the University. Chemistry can be taught just as well in the University as in the Dental School; the accommodation and equipment are better than we can afford to supply; in fact, all the scientific subjects, such as physics, chemistry, anatomy, physiology, histology, general bacteriology and pathology, can be better taught at the University, and with less expense. There is a drawback, however, that, if the Dental School became a faculty of the University, the money saved might not be expended in teaching dentistry. The profession, no doubt, would have a better standing with the medical profession if our students had to take the same scientific course as the medical students. So far as the standing before the public is concerned, there would be little difference.

DR. J. B. WILLMOTT.—The Board of Directors about a year ago asked the University authorities what it would cost to teach the dental students the scientific subjects mentioned by Dr. Trotter. Their reply would indicate that it would cost us more to have these subjects taught in the University than to teach them ourselves. The course that we asked the cost of was teaching

our students as special students, which would be different, of course, if the Dental School became a department of the University.

DR. PEARSON.—The dental profession would be gainers if the School of Dentistry were a faculty of the University. The subject of dentistry would be raised from mere mechanics to that of a scientific subject. And these subjects which are at the basis of the practise of dentistry can be better taught at the University than in the Dental School if we had sufficient control over the character of teaching which might be given in the different departments. A great deal depends upon the kind of bargain which can be made with the University. It is a question for the dental profession to decide whether or not it is wise to go to the University and ask them to take the School of Dentistry. It might be better for us to raise the standard of teaching in the school to as satisfactory a place as possible before asking the University to accept dentistry as one of its departments. In such an arrangement the institution would take our faculty and make them appointees to the University.

DR. H. R. ABBOTT.—We talked over this matter of the University this afternoon, but deferred action upon it until we heard the subject discussed here. We came here as listeners, not to give an account of what we intended to do. Personally, I cannot see what is to be gained by making the School of Dentistry a department of the University. I have not very much confidence in the Board of Governors' ability to direct the affairs of dentistry. The dental profession, through the Board of Directors, are better situated to know the necessities of dentistry than those who are not so much interested in it. There is no reason why the scientific aspects of dentistry cannot be taught in the Dental School. The standing the dentist takes in his community is a personal matter, and not dependent on a scientific education.

DR. READE.—Up to the present time I have not given this subject sufficient consideration to be able to speak authoritatively as to its desirability or otherwise. But, however, what consideration I have given it, I would say that it all depends upon the arrangement that can be made with the University. If our Board can maintain all the influence and powers that we desire, and at the same time the University look after our scientific education, it might be desirable for the School of Dentistry to become a department of the University, but it would seem that the profession of Ontario is in an ideal position. We absolutely control the standard of education and the government of our profession. Looking at it from this light, it would seem as if those who organized the profession of dentistry had builded better than they knew. The teaching facilities in the University should not be any better than in the Dental School, if we can command sufficient money. But, on the other hand, if the University of

Toronto undertakes to establish a department of dentistry of their own, we will have no choice in the matter if they say we must become a department of the University. No independent college can stand out against a government-supported institution. If we refused to become a department of the University under such circumstances, it would be the history of Toronto Medical School repeated.

DR. PEARSON.—If we look into the history of dentistry in Ontario and the history of the Dental School for the past thirty-two years, we note every year brought forth some advance to the year before. We began in a small building on Richmond Street, and then moved to Louisa Street, and occupied part of a building. Later we occupied the whole building, and in 1895 removed to the present building. Within two years an addition was made to the original building, and within five years more another addition was made to the building, and now we are called upon to increase the capacity of our building. With a history such as this would show us that we have been short-sighted in gauging the progress of this country and the progress of dentistry. It is the opinion of those who claim to know, that within twenty years this city will have a million inhabitants, and within less than ten years there will be five hundred thousand people. This province will increase in population in a marked degree in the next few years, and then there is the great North-West and the province beyond the Rockies, which will more than double their population within the next ten years.

With this immense increase of population and increase of wealth of the Dominion and of this Province and the City of Toronto there will be an increasing demand for dentists. If the Royal College of Dental Surgeons does not undertake the education of dentists for this Province and for the Dominion for the next ten or fifteen years, the University of Toronto may see an opportunity to strengthen its hand with the profession of the Dominion by opening a department of dentistry. We would certainly be short-sighted if we do not prepare ourselves for any such contingency. While we are about to increase the accommodation of the college building, we ought to do it with as full a knowledge as it is possible to obtain about the future progress of this country.

SOME PRACTICAL SUGGESTIONS IN REGARD TO REGULATING.

BY S. H. GUILFORD, D.D.S., PH D.

The practice of dentistry in its general aspect demands the possession of a variety of talent and the exercise of a variety of skill. In the infant days of the profession, when the labors of the dentist were largely confined to the alleviation of pain, the extraction of teeth, the making of artificial dentures and the filling of cavities, there were many who were reasonably skilful in each of these operations, but with the broadening of our professional horizon and the new duties that fell to our lot, it presently came to be realized that the public could be better and more skilfully served when the duties were divided through more or less specialization.

First came the extraction of teeth under an anesthetic, which relieved the hard-pressed city dentist of a feature of practice that he was glad to be rid of.

Next came oral surgery to assume the treatment of lesions and diseases of the oral cavity that the general practitioner was not well-fitted for, and which for proper and intelligent treatment required large experience, deep study and a more general acquaintance with the principles of medicine and general surgery than can be obtained in the dental school alone.

Then came orthodontia, which had been so much slighted or avoided by the general practitioner that a real need existed for its more thorough study and practice in order that the public might receive the full benefit of its great possibilities.

The last great department of dentistry to become specialized is prosthetic dentistry, which, though but an infant at the present time, promises as rapid growth and as full development as any of the other specialties.

While these various specializations are accomplishing great and good results, for which we all need to be thankful, it is realized that they can only be practised in the larger cities where the many general practitioners are willing and prefer to send cases requiring unusual treatment to the specialist.

Specialization in dentistry, any more than in medicine, cannot do away with the general practitioner.

The specialist is almost entirely dependent upon the cases referred to him by the general practitioner, and in very many instances needs his help in the carrying forward of the treatment, especially where the patient resides at a great distance from the specialist.

Only a limited number of practitioners could be specialists in any event, for aside from the question of sufficient patronage

there are very few who have the particular talent and ability required for specialization. So that, while specialists are needed, by far the greater part of dental service must be rendered by the general practitioner, and to do his best and fullest duty to those who come to him for aid, it is necessary that he have at least a very intelligent understanding of the principles which underlie special practice.

When he meets with a case of epulis or sarcoma, a cyst or a fracture, he should be able to recognize it and refer the patient to the proper specialist, and when he encounters a case where his efforts at making a satisfactory denture have failed, or where a patient presents with a complicated irregularity in which he cannot decide upon the best course to pursue, he should be able to explain the difficulties encountered, and again refer the case to a competent specialist.

There are, however, a vast number of simple cases in surgery, prosthesis and orthodontia, which for various reasons need to be treated and should be treated by the general practitioner.

True, he is often sorely puzzled in making his diagnosis, but in this he can call to his aid some one of larger experience, and having once come to a conclusion as to what should be done, he can generally carry the case forward to completion in a very satisfactory manner.

This course is constantly being pursued in difficult cases of prosthesis, and quite frequently in regulating.

If the one having the case in hand, aided by the kind counsel of some associate, is doubtful as to his ability to produce the best results, it is then time to turn the patient over to a specialist, but it is better for each practitioner to undertake all such cases of a general character as he feels capable of handling, for the variety of work thus encountered stimulates his mental faculties and reasoning powers and makes him a broader and better dentist.

There is another reason why the general dental practitioner should regard with interest any deviation from the normal in the patients brought to him.

With the increased intelligence of parents to-day, children are brought to us at a very early age, not because they really need dental service, but on account of the anxiety of the parents to preserve the child's dental apparatus, and forestall or prevent anything in the way of pain, loss of teeth or deformity.

It is the dentist who sees the child at an earlier age than does the surgeon, and he, therefore, has the first opportunity of noticing whether there is any tendency toward variation from the normal in any respect, but especially as concerns the relation between the teeth and jaws, or between the entire dental apparatus and the other features of the face.

Seeing any such tendency, the opportunity is afforded him of immediately instituting such remedial measures as will bring about harmony and restore the normal condition. At such an early age, just as the abnormality is beginning to show itself, very simple methods will often suffice to bring about any necessary change, and the patient thus be saved a vast amount of annoyance and discomfort, which would necessarily attend an operation at a later period.

By noticing the beginning of the evil and correcting it at once, the dentist becomes the conservator of the child's dental apparatus, and thus wins the gratitude of the parent and eventually of the child as well.

Besides, what is there in the whole range of dental practice more comforting and satisfactory than to feel that you have succeeded either in forestalling a deformity in a portion of the body, where it will be most noticeable, or in changing a face already deformed into one that will be at least agreeable and perhaps handsome?

Your essayist may be prepossessed in favor of the practice of orthodontia on account of his long connection with it, but it does seem to him that while it is attended with some difficulties the results and rewards that follow are so great as to make it exceedingly attractive.

There are many in general practice who accept a difficult case in prosthesis, or treatment, or filling, because they are expected to take it, and do the best they can with it, and yet these same practitioners, when a case of regulating presents, hesitate and tremble for fear of their inability to bring it to a successful termination.

This is such a common occurrence that one is filled with amazement that it should be so. There was a time when little was known of this branch of practice, and when the known appliances were of the crudest character, but to-day, after the wonderful advancement that has been made, both in the principles underlying the art and in the various mechanisms for bringing about the desired movements, this dread of regulating should not exist.

Many regard only the mechanical difficulties which present themselves in work of this character and lose confidence in their ability, whereas the very difficulties themselves ought to stimulate one's determination to overcome them.

The difficulties are nearly always mechanical in character, and if we, as professed mechanics of a higher order, cannot meet and conquer them, it is a sad reflection upon our calling.

We should remember that each difficulty met and overcome enables us to meet a greater difficulty more confidently and successfully, just as each step on a mountain-side brings us nearer the top.

The thought of acquiring a foreign language seems most formidable and possibly hopeless to the uninitiated, but, taken by easy and gradual steps under proper guidance, it really is not difficult at all. After one has accomplished the task he wonders why he approached it with such dread.

The same thing is true in all departments of life, and we should realize its truth in regard to any branch of our work.

In orthodontia, as in any other line of effort, we must have suitable instruction and proper tools to work with.

To one who has done little in this department, and who realizes his lack of experience, and possibly his lack of ability, the first requisite for success is to obtain one or more of the text-books or works treating of the subject, and to make himself familiar with the principles there set forth, the different classes of cases usually met with, and the author's methods of correction. A book of this character should not be read, it should be studied. It should be taken, a chapter at a time, and gone over and over until each part is thoroughly understood and stored away in the memory. Succeeding chapters should be treated in the same way until the end is reached.

With this study, when the part relating to the devising and constructing of appliances is reached, each simple appliance or device should be constructed, not once, but several times, until facility in construction is acquired.

The making of the different kinds of bands to be applied to the teeth, their shaping and soldering, and the attachment to them of short wires and tubes, or other devices; the drawing of wire and tubing, the cutting of threads on wires to serve as screws, and the making and threading of nuts to fit; all of these will serve as preliminary practice to the construction of appliances, of which most of them form a part.

It is a good plan to construct a number of each of the individual parts of various sizes, and have them arranged in a compartment drawer ready for use when needed. From the threaded wire and nuts, jack-screws and traction screws of varying lengths can readily be made, and tubing cut in such lengths as are most commonly required.

Work of this character will not only serve for practice in construction, but it will furnish a supply of parts ready at hand when a practical case calls for their employment. Soldering, either hard or soft, is well understood by the practicing dentist, but the joining of parts of appliances in peculiar positions often calls for the exercise of ingenuity to retain them in their exact relative positions while being soldered.

Practice, with the aid of little devices on the market, or that may be constructed by the individual, makes the operation not only comparatively free from difficulty, but quite interesting as well.

Students in our colleges follow the plan that I have just outlined, and it is surprising to notice the variety of well-constructed parts each of them is able to show after the work of a single session. There is some material wasted and some failures are made, but repeated efforts eventually bring success.

After the making of the various parts comes the construction of entire regulating appliances, as shown in the text-book, which we are following.

They can be made without a model for guide, but it is best to make and fit them to a suitable plaster model, and thus acquire facility in fit and adjustment, as well as in construction.

All of the work just outlined will require considerable time for its carrying forward, but it can be done in odd moments or at times when patients have cancelled or broken their appointments, or even in the evening.

After the mechanical difficulties of construction have been overcome, part of the burden is off the shoulders, and one can then apply himself to the study of the various classes of cases that are met with, become familiar with the author's method of treating them, consider the different movements that are required and the best means of effecting them, and, in fine, make a careful study of all that seems to be required in the case under consideration.

The author's way of dealing with any specified case may not be the best way, and modifications and improvements will often suggest themselves, which, in any event, will broaden our views and give us a better understanding of cases of like character.

By following some systematic plan as this, one will find as he goes along that his interest in the subject will increase and that confidence will develop.

Then, when a practical case presents, he will understand how to study and analyze it, how to determine the most suitable appliance for accomplishing the desired result, and how to construct and apply it.

There are many so-called "systems" of regulating, with their various parts, for sale at the supply houses, and the custom of buying these parts "ready-made" and applying them to cases in hand seems to be growing. Indeed, many of the inexperienced buy them under the peculiar impression that a knowledge of how to use them goes with the set.

Discouragement and many lamentable failures have resulted from this practice.

It is natural for the deviser of a set of appliances to believe that with his outfit any and all cases can be regulated, but as there are many different systems, and as the same claim is made for each, certainly all cannot be equally efficient.

There is no *one-way* in dentistry any more than there are *cure-alls* in medicine. Medical men recognize *specifics*, which

are simply drugs that have been found to produce more uniform results than other drugs, but no practitioner would bind or confine himself to their use.

A man enamored of his system may secure very satisfactory results, while another one depending upon the appliances alone and lacking the special knowledge and skill of the inventor, will very frequently meet with failure.

It may be convenient at times to buy certain special parts of sets of appliances when the difficulty of making them, or the time required for their construction seems to demand it, but, anyone who will depend upon the market appliances without a knowledge of how to adapt, repair and renew them is simply courting disaster.

No one can ever hope to become an adept at regulating until he understands the working properties of the metals used, their behavior under heat, their relative oxidability and the proper employment of fluxes and solders, and to gain a rational understanding of these he must undergo an apprenticeship in his own or some other laboratory.

In other words, he cannot become a master mechanic until he has passed through the preparatory stages of the work which develop both knowledge and skill.

My plea to-day is for a proper and thorough study of orthodontia by the general practitioner in both its theoretical and practical features, and the practice of it to the extent of his supposed ability in order that those under his supervision may receive intelligent advice and care in the prevention of dental irregularities, and his equally intelligent and skilful services in their correction once they have become established.

DISCUSSION.

DR. ROBERTS.—Mr. Chairman and Gentlemen: I consider it a great honor to have my name associated with that of Dr. Guilford in considering this most fascinating study of orthodontia. I felt somewhat diffident about undertaking the opening of the discussion of a paper written by one who occupies and has always occupied such a high position, as a professional man and as a gentleman, in the dental world. And for a young man to attempt to criticise methods and principles taught and held by such a veteran orthodontist as Dr. Guilford seems almost amusing. But from what I know of Dr. Guilford I believe that he would prefer having a brother dentist discuss his paper who is not in full accord with all his views, and he is so broad and charitable in dealing with his young men that he can sympathize with and bestow a patient smile on the opinions we have formed, many of which we will have to change after sad experience. There are not many points in this paper that will require criticism, and only two with which I would take issue

with the essayist. "Specialization in dentistry," as Dr. Guilford has said, "any more than in medicine, cannot do away with the general practitioner." And in dentistry, as in medicine, the tendency to specialize is developing very rapidly. It is but the reasonable trend, for the thought and scientific methods of to-day, combined with the experience and hard work of the generations of students and workers who have gone before, are making the knowledge we have in almost every branch of medicine and dentistry so extensive that it is absolutely impossible to imbibe, retain and utilize all the truths that are known and are almost daily being discovered. If we cannot do this, how can we expect to make progress along any particular line? Does it not seem reasonable that the man who devotes all his time to one particular line of work, living in the atmosphere of it continually, should not know most, develop most, and be best able to render scientific service to those put in his care. The fields for research in any department of dentistry are so large that I cannot believe that the effect on his mental faculties and reasoning powers will be anything but stimulating to the student. In my humble opinion we do not need broader and better dentists so much as we need broader and better men, and the man who professes to know the all of all branches to such a degree that he will not refer his patients to a specialist for fear of belittling himself in his patients' eyes is neither a broad nor a good man. Dr. Guilford expresses amazement that so few dentists undertake even the simpler cases. On the contrary, it has amazed me what some men do attempt. Just think of the position orthodontia holds in the profession! How much training did any man present get in his college days? This subject, which calls for so much skill, artistic taste and patient effort, occupies how large a place in the curriculum of the college to-day? We have in Toronto one of the finest equipped and best manned dental institutions in the world, owned and governed by the entire profession of the province, which should give us a practically ideal school. The course extends over four years, and in that entire time there are only fifteen lectures delivered to the student, who knows absolutely nothing of the principles or practice of this subject, and I understand orthodontia receives as much attention in this institution as in any and more than in most other institutions of a similar character. When a man has attended those fifteen lectures and done the practical work they call for, he is graduated in that subject, fitted to practise orthodontia. Is it a cause for amazement that a practitioner realizes his ignorance, and feels that he cannot conscientiously undertake even the simple cases when there is any chance to refer the patient, whose interest he has at heart, to one who is making this branch a life study and work? It seems to me that such a limited course as this is almost worse than none. If the student were given

fifteen lectures on occlusion and diagnosis alone he would be better off than with such a superficial knowledge of the whole subject as he must have when he is graduated. If the time spent in teaching him how to make nuts and thread wires were spent in studying facial art, I am confident he would be in a better position to give advice, and less likely to undertake cases for which he has had no special preparation. Dr. Guilford evidently approves of a man making his own instruments. He speaks of always having a stock of individual parts on hand, to be adjusted to any cases which may present. If there *are* parts that can be utilized in *any* case, in what way are those parts different to other instruments—clamps, matrices, or even ordinary excavators and pluggers? If we feel that we can buy better clamps and better pluggers than we can make ourselves, is it not possible that there are men who are more expert in making nuts, alignment wires and anchor bands than we are? If the man of long experience in shaping, tooling and tempering the steel instrument can produce pretty nearly the ideal article, is it not reasonable to expect more strength, more stability or elasticity, and greater neatness and beauty from an alignment wire or an anchor band made by men who have made perfection in these various characteristics their ideal for years? Can you not occupy your time more profitably in getting accurate scientific plaster models from plaster impressions, and making these models so beautiful that they are an inspiration to do ideal work? Can you not use your time to better advantage in studying, studying, *studying* those accurate models, and with them a pair of good, specially taken photographs? Would not time spent in this way be of greater advantage to your patient than making nuts, anchor bands and alignment arches, when you know that these stock parts can be secured from your dental dealer, and that they will give far greater satisfaction than anything you can turn out yourself? There are always parts of an appliance that the operator has to make, but those I have mentioned are the backbone of any modern mechanism placed in the mouth. Jackscrews, traction screws and the head cap are practically obsolete in the practice of orthodontia, but if they are used, they certainly can be bought much cheaper, and are made with more adaptability and neatness than anything we can make ourselves. Models, in my opinion, are for the purpose of study and comparison, and the adapting of appliances should be all done at the chair. But it seems to me there is too much consideration given to the mechanical feature, and nothing like enough thought and stress laid on the diagnosis. If we know the cause of the trouble, and if we know what the normal condition should be, the question of its correction is infinitely simplified. The trouble is that most of us do not know what is the trouble, other than that the teeth are crooked or that the anteriors protrude. If we cannot distinguish an in-

harmony of facial contour, by its being a protrusion of the upper, for instance, or a retrusion of the lower; if we cannot see that the irregularity of the lower anterior teeth was the cause of a torsal position of the upper anteriors, and that unless both are corrected the one will not remain correct; in other words, if we cannot diagnose our case we certainly cannot hope to treat it successfully nor retain it permanently. Let the knowledge of the ideal always be in the background, and placing our case against this background we can readily diagnose the abnormality. If the knowledge of the ideal were more general in the profession there would be no danger of patients being put off till they are fourteen or fifteen years of age. If the malocclusion of the first molars is noticed at six or seven years of age, and corrected then, much discomfort and suffering in subsequent treatment would be avoided and many faces now misshapen would be added to those who always brighten us with their sunshine and cheer us with their pearly smile. I am not an adept in making regulating appliances, and I have had very little experience in using them. I am a graduate of the day before there were many lectures given in the regulation of teeth, and I was very much interested in Dr. Guilford's paper. That is one of the reasons I came so far to hear it. I wanted to hear about the regulation of teeth. I am not prepared to enter into a discussion, but would like to ask a question or two. First, what sort of wire Dr. Guilford used, and also if he has had any experience in the Jackson system of regulating teeth. I am after information, as well as most of the people here, and I came to learn, so that if I do not make very much of a criticism, I hope you will excuse me.

DR. GUILFORD.—I will answer your question in regard to the wire. The wire that I used is about 49-1000, or 50-1000 inches in diameter. It is German silver, and is drawn without being annealed the last time, which gives it a certain amount of hardness. In my class at college the students, of course, draw their own wire. This wire can be bought in this exact size of a firm of instrument makers that make it, and also the appliances I have used here to-day. They can all be bought from a firm in Philadelphia, Messrs. Geo. P. Pelling & Son. I mention this because the general practitioner would hardly want to spend his time drawing his own wire, etc. The advantage of making your own nuts is that you can make them any length you please, any time you please, etc. If your wire is of a certain gauge, and the dies are of a corresponding gauge, it only takes a few minutes to make them. I do not know very much with regard to the Jackson system. The best way to judge any system is to look it over and find how generally it has been adopted. As a general rule a system is good in proportion to its general adoption. I state that as a general principle. Dr. Jackson is an expert at making his appliances, and

he gets excellent results, and several men who have followed the system have also gotten good results.

DR. DUBEAU.—I would ask Dr. Webster to express his views.

DR. WEBSTER.—I would like to call attention to what seems to be the difficulty of placing orthodontia on a scientific basis. Every person who undertakes to regulate teeth immediately finds out a few little things, and then he thinks he has an appliance that he would like to sell pretty soon, and then he calls it a system, and then he writes a book, and so we have Jackson's system, and Angle's system, and Knapp's system, and I suppose there are some other systems coming on. That befogs the question, that whole idea of system. There ought to be some definite foundation principles of the subject of orthodontia and then there could be a selection from the appliances that are most suitable for the correction of the case in hand. If you cannot get them, make them yourself—you ought to be capable of doing that—but above all things we should have the foundation principles of the whole subject. Now, that is what I have always aimed to teach rather than to teach the use of a whole lot of special appliances. I would prefer to teach the general principles of the subject in so far as we know them. The next thing, as Dr. Roberts has stated in his criticism, make a diagnosis of the case before you treat it, and after you have made a diagnosis, then treat on these principles, and make the best use of the appliances you have, and let systems go. The relation that a course in orthodontia should bear to the other subjects in a college course is an important question. While we have only ten lectures prescribed in our college, there are more than that given. Ten lectures appears a very small proportion to what teaching is given in other subjects, and our men come out not equipped to take the difficult cases, and consequently we have specialists who give this a good deal more attention than the ordinary practitioner can afford, and they will succeed on that account. Every general practitioner, though, should have general information as to how a patient ought to be treated, and what ought to be done for him, and be able to make a fairly good diagnosis, and be a conservative practitioner and not extract teeth that should not be extracted.

DR. DUBEAU.—This is such an important subject that I would like as many as possible to discuss it. Orthodontia is certainly one of the specialties of dentistry which has been greatly neglected. I would like to hear somebody else speak on the subject.

DR. MAGEE (St. John).—I regret that I did not get here in time to hear the whole of Dr. Guilford's paper read, but there are one or two little things I heard since I came in. Dr. Guilford says that you should make your own appliances, and I agree with him. Appliances should be made for each and

every case, and though you never use them again, or never use even any part of them again, you are not at a very great loss financially. I do not think anybody could buy a boot to fit a club foot, and similarly no ready-made appliance can properly fit a tooth quite so well as one you make yourself. One of the speakers asked about the Jackson system. The Jackson system, as Dr. Guilford said, has a great many good points in it, and to my mind the one place where it is most effective is in cases where the deciduous teeth are still in place. The jaws may be widened quite as effectively and at an earlier age, and moreover, owing to their shape the deciduous teeth offer a very firm grip to the cribs of the appliance. Even a quite loose deciduous molar may be utilized.

DR. STEVENSON.—It is very gratifying, I think, that the subject of orthodontia is becoming so prominent. It is a subject which all of us now are more or less conversant with. The wonderful results which have been obtained should stimulate us to look into the subject more than we do, and give it more careful attention. Some of us think we are too busy to go into something which is comparatively new to us. When we get to that stage of the game, we are beginning to get fossilized. It is a gratifying "sign of the times" that Dr. Guilford is encouraging general practitioners not to be afraid of a thing. As far as making appliances is concerned, I can sympathize very largely with those who make appliances themselves. While it is very often convenient to buy them, it is generally advisable to make them, otherwise you are going to try to alter something which may not be exactly suitable.

MEMBER.—I would like to say this, that in looking over the business world, the men, from my observation, the men who succeed, are not the men who do all the work themselves, but the men who get other men to work for them. Now, when we begin to apply that to dentistry, it seems in many ways quite impossible. The dentist is one whom patients want to attend to them himself, and not an assistant. While that can be carried on to some extent, it cannot to any great extent. In applying that to orthodontia, it seems to me that while a dentist should know how to make every appliance perfectly himself, the idea is never to make them if he can help it, but to use appliances made by someone else; that if he cannot have an assistant on hand to make appliances to suit him, he should buy them, and to use appliances every time, whether he can buy them or have them made, and not use his time that way, but simply use his time applying these appliances and in working out what he believes to be the right system and to adopt any means to save his own time.

DR. SPAULDING.—Some mention has been made of text-books on orthodontia. No doubt a great deal of help can be obtained from text-books that are written on special examples

and irregularities; but when we come in contact with literature wherein a special subject is involved, we must see that by the time a work on a progressive subject like this is published, it must be away behind the times. The most up-to-date literature can be had in the dental journal. There is hardly a text-book on orthodontia that does not go into the thing almost entirely from the mechanical standpoint. As Dr. Webster says, if we get at the principles involved, we will get less unsatisfactory results, and serve the purpose of orthodontia best.

DR. GUILFORD.—I do not like to be misunderstood in what I have undertaken to explain to-day. I do not mean that appliances should never be bought. In many cases it is advisable to do so. What I intended to guard against was the indiscriminate buying of appliances and putting them on a case just as they came; in other words, to depend upon bought appliances, and not upon what you can supply by your own skill. If anyone does not want to make them, he is at liberty to buy them. I would not advise anyone to make his own appliances, using up valuable time, but simply to be able to make them, and if he has time, to make them as the patient may require. Sending patients to the specialist: If a general practitioner in the course of his practice sees in a certain case a slight irregularity, is he going to send that case off, perhaps a hundred miles, to be regulated? Possibly the patient cannot afford it. Is it not better for the general practitioner, if he has any knowledge, and he ought to have, to go to work and correct that irregularity himself? If he feels any doubt about being able to handle it successfully, he should send it to the specialist. The reason I wrote this paper is this. On several occasions I have had patients sent to me to have their teeth regulated. Patients have come over one hundred miles. They were not able to stay very long, but they were able to stay long enough for me to study the case and decide what I was to do, and then make the appliances and put them in place. As I could not take the case any further, I wrote to their dentist, explaining the case in detail, and telling him just exactly what I wanted done, expecting him to carry the case forward. In every instance they have written back saying they could not take the case, not knowing anything about orthodontia. It amazed me that there should be any men graduated from our colleges, and yet not be able to carry on a case under written instructions, and that is the reason why I write the paper, to try and develop the thought that men ought to be able to help themselves, or help the specialist.

Addresses of the two firms mentioned in Dr. Guilford's paper: Geo. P. Pelling & Son, 23rd and Arch Streets, Philadelphia, Pa.; Blue Island Specialty Co., Blue Island, Ill.

It was moved by Dr. Stevenson, seconded by Dr. Springle, and unanimously carried, that a vote of thanks be given Dr. Guilford for his most interesting paper.

DR. GUILFORD.—It has probably given me more pleasure to come here and see you than it has given you to listen to me; but if you are satisfied, I am satisfied.

DENTAL STANDARDS IN THE BRITISH EMPIRE.

BY F. A. STEVENSON, MONTREAL.

Mr. President, Gentlemen: I have to state in explanation that it was my good fortune this summer to spend two months in Great Britain, and while I was there I thought it would be a comparatively easy thing to look up data to present to this meeting, which would give us in a concise form the various standards of efficiency throughout the British Empire. I went to the General Medical Council of Great Britain with instructions to place before them our Dominion Dental Council movement, which I have done. When I was there I thought I could do a few days' work turning up records which would place at our disposal the dental standards throughout the Empire. There is no central record office in London where such information could be obtained, and I could only get verbal information from one or two officials there, one of whom was the Secretary of the British Dental Association. He said that he thought he had records which he could send me before I left Liverpool for Canada. Unfortunately, these records have never arrived, and I can give you no details as to standards throughout the Empire. But I can tell you this, that the L.D.S. from England is accepted in most parts of the Empire where they have not already dental colleges. I think, in the parts of the Empire where dental colleges exist, there would be some examination required from a man who holds the L.D.S. from England. It is a very valuable thing to have an L.D.S. from England if you wish to move about the Empire. I understand that the authorities of Ontario have hesitated to prosecute a man with the L.D.S. from England. The English L.D.S. is accepted in smaller dependencies; I should imagine in places such as Jamaica, and probably in Ceylon, there would not be any difficulty in practicing with such a registration. How to obtain an L.D.S. on the other side of the sea: A few years ago they absolutely refused to admit a man in good standing in other parts of the British Empire to enter for examination. When I was a young man, just leaving college—in fact, while I was a student—it was my intention to go to England to practice, so I went to Harvard University and obtained their degree. When I got to England I found that they had just passed a by-law prohibiting the registration of men holding foreign

degrees, and that they would not register me, and that there was nothing for me to do but to take the four year course and enter for examination again. I believe that a man who has taken a four year course in the Provinces of Quebec or Ontario could present his credentials and take his examination in England without the course of studentship being insisted upon, so that we are that much better off than we were. That is what I understand from personal interviews with resident English dentists. On the other hand, I am also told that each case is looked into upon its merits, that they will not commit themselves to any wholesale statement. They make them show up all the records that you have and look into each case. The value, you see, of the English L.D.S. is that you can probably practice anywhere within the Empire. Our own degrees here are not licenses in England, but would entitle us to examination, although they would look into each case on its merits.

DR. DUBEAU.—I am informed that there is a gentleman from New Zealand with us. If so, we would be delighted to hear from him.

DR. YULE (New Zealand).—I think by the end of next year we shall have a college in New Zealand, but at the present time we have to put in three years with a preceptor. After the three years we have an examination before the Dental Board, consisting of three members of the medical profession and three dentists chosen by the State, and they hold examinations every six months or so; but, as I say, I think towards the end of this year, or the beginning of next year, we shall have a college out there, and they are trying to have it on the same standing as those in England. The entrance examinations will be medical preliminaries, which is, I think, the entrance examination in England. I think the English L.D.S. is recognized straight away out there, though the holders of many other degrees have to go before the Dental Board and pass their examinations before they are admitted to practice. I could not say whether the L.D.S. of Canada is recognized there. I do not know, but they have an L.D.S. in Australia.

DR. WEBSTER.—Dr. Stevenson in his remarks gave us the impression that we could register in England, or at any rate apply for examination, provided we held an L.D.S. of Canada. I think there have been some negotiations in that connection with Ontario, between the Board of Ontario and the General Medical Council of Great Britain. I think Dr. Hanna was on the Board at that time, and will know the details of how successful we were in those negotiations. I think he could tell us just how much registration we can get.

DR. HANNA.—It is some years, I think six years, since the Ontario Board sent official communications to England in connection with this matter. The first communications received rather curt treatment. In fact, we did not get knowledge of

any official action being taken. The official to whom they were sent—I have forgotten the title—merely acknowledged receipt of the papers; and at the next meeting of the Board the question came up, and our Secretary was instructed to make enquiries. The reply to these enquiries was to the effect that inasmuch as we had no National Association, the Medical Council, which controlled the Dental in England and the British Isles, could not take any steps or official action on the communication. That fact was one of the chief causes, one of the chief points of stimulation in Ontario, or rather in the Ontario Board, towards establishing this institution. Our communication was only a provincial one and could receive no recognition. Mr. President and gentlemen, I do not know what has been done since that. We followed that up by further enquiries, but got very little satisfaction, and I do not know what has been done in the last two years. I do not think there has been any official action that would justify us in believing that we would get any recognition for our professional standing in Canada, in Ontario, at all events. That is the extent of my knowledge in connection with this communication. Mark you, we got no rebuffs from the dental profession in Great Britain, but when it came to giving official recognition by the authorities that govern the medical cult in Great Britain, that is, the Medical Council, we got no encouragement whatever, and I think we are in the same position yet.

DR. STEVENSON.—I think what Dr. Hanna says is perfectly true. The General Council would not be willing to take any cognizance of our standing in Canada, but if it came to individuals, I believe that they would not refuse to examine them. We have the case of one of our confreres who went over a couple of years ago and took the examination and who was not refused. They are treated as individuals and not as Canadians. I was very glad to hear the gentleman from New Zealand say that they are recognized over there, as New Zealand, we know, is doing things.

DR. NOLIN.—In regard to the necessity of holding periodical examinations for the students, I may say that in this case the Province of Quebec, as we have already tried this system in the dental school, and our experience so far, after two years' trial, is that it is very much to the advantage of the students, I think it comes into the discussion of this subject to say a word about this. Instead of having a yearly examination, we have an examination every half term, and a student cannot go into the next term unless he passes that examination. It seems rather hard at first, but you will find the result to be this, that after the first half-yearly examination quite a number are plucked; after the second, all pass. The result has been that the students, instead of waiting till the last month of the year to study, must study their lectures every day and prepare for their half-yearly

examination. I might enquire, Dr. Webster, if they have anything of the kind in Toronto.

DR. WEBSTER.—Term examination, and daily and weekly examinations.

DR. NOLIN.—There was mention made of the case of a gentleman holding an L.D.S. and being able to practice in any part of the Empire. If the British Dental Association will not admit us to practice there. Now, so far as improving our relations with Great Britain is concerned, I think that the suggestion of our President this morning is quite in order. The question may be taken up later on. It was spoken about in England at the last meeting of the British Dental Association. Some of our members were present then and suggested the formation of a future British Dental Association, composed of all the Dental Associations of the British Empire, and I think that the suggestion of our President this morning that the officers of the Canadian Dental Association should receive instructions at a later meeting to undertake such measures as to communicate with the British Dental Association to meet in Canada, and then have a British Empire Dental Association. I think this is the only way of coming to an understanding. I will be able to say a good deal more at the next meeting than I can now. However, I think myself that the time will come when we will have a British Association, and I am quite willing to acknowledge that the East has a good deal more knowledge than we have.

DR. MCINNES.—Mr. Chairman: I have been in hopes that the report of the Dominion Dental Council would have been called shortly, and I believe it is in the programme for to-day.

DR. DUBEAU.—Do you think, gentlemen, that we should pass now to the report of the Council, or leave it to next day?

REPORT OF THE DOMINION DENTAL COUNCIL.

BY PRESIDENT H. R. ABBOTT, LONDON, ONT.

Mr. President and Gentlemen: I have been asked to state what we have been doing during the last two or three days at the Dominion Dental Council meetings. You are all aware of the organization, and all know the history of the Dominion Dental Council up to organization. You all got your announcement or a pamphlet from the Secretary, announcing what has been done until then. I think I will leave all the statistics to the Secretary, and merely tell you that we are very pleased to announce that all the provinces, with the exception of Quebec and British Columbia, have been represented. Quebec, we are glad to say, has been flirting with us some time, and probably we will soon announce an engagement, and we hope a marriage before next season. I think our deliberations have convinced the two members present that it will be to their interests to come in with us. British Columbia has already signified that they will accept our certificate. They have appointed a delegate, but the delegate did not appear. We think they will accept, but we have not received notification officially that they will accept. The deliberations will be reported to you in full, and a copy of the Constitution will be given to you. All I can report to you is the mere fact that we are in full running order. We are now ready to receive application from the four classes. The Secretary, however, will give you all the details.

REPORT OF THE SECRETARY OF THE DOMINION DENTAL COUNCIL.

To the Officers and Members of the Canadian Dental Association.—Gentlemen: If any of you expected that the first legislation of the D.D.C. would be perfect and complete, you made a mistake. If any of you expected the administration of the first year would be flawless, you made a bigger mistake. Mistakes were made in our legislation, errors have occurred in our administration, but, fortunately for the D.D.C., we were on the lookout for these in order that we might gain that wisdom which experience teaches, the result being that we have now placed ourselves in an advanced, and I think satisfactory, position.

During the year ten men came up for final examination under either Class B or C. Of these six failed to receive the necessary number of marks to pass them. Four, consequently, are entitled to receive our certificate.

Three applied under Class C (the ten year practitioners' class). Of these one was rejected, two granted. The rejected application was treated as it was because of inability to furnish

the necessary proof of being entitled to the certificate. Three other partially completed applications are now before us under Class C, and there are indications that the number of these applications will increase.

Nineteen men applied for partial examination; that is, they applied for the privilege of taking the D.D.C. examination in the subjects they had passed at college in the year they had passed. This was granted. It means that two years more must elapse before these men can receive the D.D.C. certificate. During that time these students will be under an annual inspection of our presiding examiners, and it is felt that they will thus be better able to judge of their fitness to practice than if they were before them for only one year.

Examinations were held during the year in three Provinces, Nova Scotia, Ontario and Manitoba. Only two complaints upon the conduct of the examination have reached me, and these complaints were only of a minor nature. For a first examination this, I think, was very creditable, and augurs well for the success of future examinations.

During the year I sent out some 2,000 copies of our rules and regulations. This was done in the hope that every member of the profession in Canada would acquaint himself with our provisions. I conceive it to be the duty of the Council to take the entire profession into its confidence upon all subjects, hence the general distribution of literature.

Our net receipts for the year were \$1,030.00; our total expenditure to date, \$645.25. This does not include the cost of the present meeting.

The equipment of the Council is now practically complete, and the work will hereafter be carried on with greater smoothness and more expeditiously than could be done the past year.

Very full precautions were taken to safeguard our examinations. It was utterly impossible for any candidate to secure an undue advantage or to be shown any partiality by any officer connected with the examinations.

The provincial legislation during the year has been very favorable, and as much progress has been made as was to be reasonably expected.

A number of changes have been made unanimously to our rules. These will be printed and distributed to you all, the same as in former years.

We have insisted during the year upon a rigid adherence to our constitution in all matters affecting the issue of certificates of qualification. In every case where the slightest defect in proof of qualification was discovered the applicant was compelled to remove it before his application was entertained. In order to maintain our high standard and reputation it is necessary to continue this, and such is the determination of the Council.

Respectfully submitted,

W. D. COWAN, *Secretary, D.D.C.*

DISCUSSION.

DR. WEBSTER.—I have a question. I understand there is some difficulty in getting the proper signature for ethical practice. What has the Council done in respect to that?

DR. COWAN.—That is a very good question, and I am glad you have asked it. I may say that during the past season we adopted certificates which had to be signed by the President and Secretary of the Provincial Board, proving that he had been in legal, ethical practice. During the year three applied from the Province of Ontario. The Province of Ontario was unable to supply. Our friend, Dr. Willmott, sent one with a certificate that he had been in regular ethical practice, "as far as I know." When that came to me, I said it was no certificate at all, and I would not accept it. Because it had to be an absolute certificate, because classes C and D depended entirely upon that certificate. That was the distinction, and if it was not perfect the whole thing would be wrong. However, the Council has drawn up an entirely new certificate. For the next two years I believe I am to be Secretary again. I will be furnished with the names of men resident in the vicinity of the man applying for the certificate, and I will have to write to them and get them to answer a number of questions, and in that way the Secretary is to be the judge, largely, as to whether the man has been in regular ethical practice. Local officers also furnish a certificate. The present certificates, therefore, do prove that a man has been what he ought to be, or he cannot get a certificate.

DR. WEBSTER.—Very satisfactory, indeed. Another question, in connection with the examinations. I was present during the holding of the examinations in Toronto, and followed the matter pretty closely. I looked over all the papers very carefully, and I must say that this is the best examination I ever saw set by any examiners. The management seems to me to be very good, with the exception of a few minor details, but I am sure the Council has fixed all of these minor things. Altogether, this examination is one of the best that could possibly be set, and, as the Secretary has said, there is not a single hole through which a student could get into that Council without having passed his examination, without knowing his subject and getting the necessary marks. It is absolutely fair, and the candidate must pass the examination. These things are so essential to upholding the standard of this examination, which is to be our standard in the future. I am very glad to say that our past examination was a good one under such difficulties.

DR. COWAN.—I may say that six of those men who applied for final examination were plucked. One of them gained an average of $76\frac{1}{2}$, and failed in one subject, and consequently was plucked. His average was very high, still we cannot grant that man a certificate; but we have provided for a supplemental

examination for all candidates who fail in not more than two subjects, so that those who fail in not more than two subjects will be granted a supplemental examination within two or three months, if they demand it, but we decided that the decision of the examiners was final. A supplemental is an absolutely fair thing, and will be granted.

DR. MCINNES.—Mr. Chairman, Ladies and Gentlemen: In presenting to you the report of the transactions of the Dominion Dental Council covering the last year or two, it seems to me that our Secretary has been necessarily brief, and probably too brief to satisfy the desires of those present, and the desire of the profession generally, to know what has been going on. Since we were last before this Association the Dental Council of Canada had its first meeting as a properly constituted body in the city of Toronto last November. At that time a great deal of business was transacted and the machinery was put in motion for the conduct of the Council as a living thing. Necessarily a good deal of that legislation was hurried, and yet at the same time it was well considered. The representatives of the various provinces deliberated upon it for five or six days. The result is about forty or fifty pages of ordinary matter, some of which has been put before you, and a good deal of which has been put before you through the pages of the DOMINION DENTAL JOURNAL, and a little pamphlet published by the direction of the Council was sent to a large number of the members of the profession, in fact, all of them, so far as our Secretary could obtain their addresses throughout the Dominion. This pamphlet setting forth the regulations was in itself brief, and in a measure calculated to give a generally correct impression of the constitution and the regulations governing the conducting of examinations under the Dominion Dental Council. It was, however, necessarily brief, and has left a large proportion of the profession throughout Canada in a good deal of ignorance still as to the constitution and the management of the business of the Dominion Dental Council. I see our friend, Dr. Guilford, here. I may tell you that during the two years or so that have passed since we last met I have had invitations from our friends to the south of the international boundary, asking me to speak upon the matter of the establishment of national standards in the profession, and upon international relations as to professional standing. I have not been able to avail myself of these invitations, but our friend, Dr. Guilford, is here. He came this morning to the Council and asked one or two pointed questions. I will undertake to answer for him these questions more fully now than they were answered this morning by our President in his hurry, and perhaps it will be at the same time of some information to some of the members present. I may tell Dr. Guilford that the several provinces in Canada, like the states in the Union, have sovereign powers in the mat-

ters of education. The provinces make their own laws in all matters concerning education. The several provinces, then, in dealing with the learned professions, make their own laws, and consequently provide interprovincial barriers, just as you have interstate barriers in the States. One of the primary objects in the formation of this Council was "ease of interprovincial registration"; the secondary object was the establishment of a national standard in the profession. The first might have been obtained in two ways: First, by an Act of the Parliament of Canada, supplemented by an Act of each of the provinces of the Dominion. Second, to reach the same desired result by way of mutual agreement. The medical profession of Canada undertook to reach the desired result in the first way, and I may tell you up to the present have failed. Taking a lesson from that, we moved along other lines, and we got the provinces to agree among themselves. Now we are in the position that of the nine provinces of Canada to-day, seven of them are affiliated provinces, each one sending its representatives to the Dominion Dental Council, and the conditions of affiliation are these: The province entering the agreement shall elect (two, formerly) hereafter one representative to the Dominion Dental Council, and shall accept the degree of qualification issued by the Dominion Dental Council as qualification sufficient for the granting of license to practice in that province without examination; so that the Dominion Dental Council certificate of qualification is now accepted in seven provinces of the nine forming the Dominion of Canada; and we have indication already that the other two provinces will, it is likely, very shortly take advantage of the opportunity to become two of the affiliated provinces. In this way we have got over the difficulty as far as interprovincial barriers are concerned; and by the adoption of a standard of qualification, we have established a national standard, one that we believe will be fair, and it is understood to be as high as possible, so that it shall in every way have the respect of all the provinces. Now, it was necessary for several of the provinces to get certain legislation, and it was part of the agreement that each of the provinces should get such legislation as to admit of each of the Provinces accepting the degree of the Dominion Dental Council as qualification sufficient for the granting of license. The Province of Manitoba was the first to move and make that change, and the clause adopted in Manitoba has been adopted in Alberta and Saskatchewan. Ontario had that power, and the Lower Provinces, I believe, have that power, so that up to the present there have been practically no legislative difficulties on the part of the provinces put in the way of the working out of the Council's scheme; and not only that, sir, but actually the existence of the Council has, as Dr. Cowan has told you, given greater strength to the provincial Councils throughout entire Canada. The discussion which

a few moments ago you asked me to take part in, was something that is akin to the whole matter of the establishment of the Dominion Dental Council, and of the establishment of this body. I may say, sir, that when writing the original articles to get the formation of the Dominion Dental Council, I had even then in my mind a greater Association, that one which was hinted at to-day, the British Empire Dental Association, or the Dental Association of Greater Britain. It is only four years since we had our first meeting of the National Dental Association. It was then we had our first practical steps taken towards the formation of the Dominion Dental Council. It seems now as if the formation of a National Association for Canada was practically settled. Already we are beginning to look to other parts of the British Empire; already our Secretary has received instructions to write to the various parts of the British Empire to see what steps will be necessary to take upon our part or their part to have the certificate of qualification of the Dominion Dental Council accepted as qualification sufficient for the granting of license to practice in that portion of the Empire; and I think it would be well—I regret I did not have the pleasure of hearing your address—I think it would be well if there were extended from the President of the Dominion Dental Council invitations to the various dental bodies of the different parts of the British Empire, looking forward to an early meeting of the representatives of all such bodies. It seems to me that in the meeting in Toronto, only a week or two ago, of the British Medical Association, embracing as it does representatives of the medical bodies of all parts of the British medical world, that we have an example worthy of our imitation. We must immediately proceed to bring about such a meeting as they have had there. The benefits which will naturally arise to the profession, to the members who come to such meetings, to the profession as a whole, and the standing which it has in the eyes of the public generally, must necessarily be great, and it will not be necessary for me to discuss them here at present. There are certain things in connection with the establishment and the conduct of our first examinations that call for perhaps some further comment than was given. The percentage of failures of those applying for a certificate seems upon the face of it very large indeed. Of those who applied for the certificate by way of final examination there were ten; of successful candidates, there were four. Now, it is expected that there will be more than those four successful, and reasonably so. We venture to quote one instance, that of one man taking an average of $72\frac{1}{2}$ per cent., but below 50 per cent. on one paper. We could not grant him his certificate; we could not refund him his fee; we could not give him a supplemental examination, because there had been no provision made for any such action. We have, at the last meeting, made provision for supplementals, but only in the

case of the final examinations, and that only where the applicant has failed in not more than two subjects. We have also made provision for the refund of half the fee in Class "D" in case the applicant failed entirely.

Class "A" covers all those who began the study of dentistry *after* the 1st January, 1906. The regulations impose certain requirements upon the applicants. These requirements, dealing with the preliminary qualifications or entrance examination, must necessarily be dated at some date after the first meeting of the Council, the meeting of the Council being held in November, 1905.

Class "B" covers all those who were registered as dental students in any of the agreeing provinces at the 1st January, 1906, because evidently we could not with those go back behind the date of the coming into existence of our Council and demand that they should come up to the required standing of matriculation; therefore the chief difference refers to the matter of matriculation standard. The matriculation necessary is matriculation in Arts at one of the provincial universities.

Class "C" covers all those who have been in regular ethical practice ten years previous to the 1st January, 1905. All those who are in regular practice at the 1st January, 1905, and shall have been in regular practice ten years at the date of their application for license, are to be given the certificate of the Council without examination.

Class "D" applies to all those who were in the practice of dentistry during the year 1905, and had not been in practice ten years. These were allowed to take examination upon some practical subjects and be given, if successful, the qualification certificate.

Now, it has been found, after working out these examinations, that many of the students desire to take their examination in the primary subjects as soon as possible after they have passed their examination on such subjects in the various colleges in Canada or elsewhere. Therefore, the Executive decided that to them should be given the opportunity to apply for examination in any of the last five papers (it is purely an arbitrary division into ten papers) at any time they choose after they have been *bona fide* registered students of dentistry for twenty months. This, of course, means that a number have already tried a partial examination. I think we had about nineteen applicants of that class. It is manifestly fair that any man shall take his examination when he is most fit, and if he pass, the marks should stand to his credit. The fee for each paper in case of subdivision is \$5.00. The division of the subjects has been altered, and that is a detail which I do not think I can go into here, but I may say this, I am glad to be able to inform you, as the Secretary has said, that the whole constitution upon which we base ourselves as a body is to be printed and dis-

tributed. It was mostly printed in the DOMINION DENTAL JOURNAL, as he said before. It has been considerably amended during this sitting of the Council, and will be printed and distributed as amended.

The first two classes treat with those entering into study after January, 1906, and those in study at January 1st, 1906. Three and four treat with those in actual practice at the 1st January, 1905. Our first regulations were made by the Provisional Council which sat in 1904, but we found afterwards those entering into the study during the year 1905 had not been given fair notice, so we changed the date for the two first mentioned classes to 1906; but in so doing we had left a whole class, those who graduated in 1905 and began to practice during that year, without any provision to come up for examination. That had to be altered, and I think the arrangements made will be satisfactory to all parties concerned. Of course, the time will soon come when all the applicants will be in Section "A," those who began the study of dentistry after January, 1906. It is to them we must look for those who will uphold most successfully the standards established by this Council. Another change is that after this meeting the Council will have but one representative from each province. In all matters affecting the constitution we are limited to one vote from each province, and we have come to the conclusion that we can get along with one representative from each Province. The examiners are appointed by this Board; no member of the Board acts as an examiner. They are appointed by this Board throughout the various parts of Canada, and the examinations are held in the capital cities of the provinces. They are conducted in a very successful way, largely inaugurated by our Secretary, so that the examiner knows nothing as to who is who, or what number a student is given. Nobody knows but the Secretary of the Dental Council. The papers are forwarded from him to the presiding examiner, and from the presiding examiner to the Secretary. He it is who numbers them so as to know one from the other; he knows the names; they are marked and tabulated by number only, so that it is practically impossible for any favoritism to creep in in this way, and everything has been done that can be done to safeguard the examinations.

As far as regulations for ethical practice under Section "C" are concerned, we felt that the certificate that we had adopted in the first case was not sufficient. We felt that our friends from Quebec who were fortunate, perhaps, in having provincial legislation dealing with unethical practitioners, were afraid we should not have our standard of ethical practice sufficiently strict, and that by joining the Association they might lose something they had already gained. I think the feeling amongst them now is that they are perfectly secure in our hands in case they come into the confederation. The system has been

changed, I say. Now the Secretary of the provincial corporate body is simply a servant of the corporate body. That body can sue and be sued, action can be taken against it. If a man has paid his fee, in so far as the law of the province is concerned, has so conducted himself that he has never had action taken against him, the Secretary of a corporate body must of necessity give him a certificate, and such certificate is, therefore, of little value as to whether the applicant was or was not an ethical practitioner. We ask, therefore, under the present regulations, that the Secretary of the provincial registering body shall certify to the applicant so far as he knows officially; we ask further, that the applicant furnish us with a certificate from a Justice of the Peace, magistrate, or judge of the district in which he lives, to the effect that he has been in regular ethical practice; but we go further than this, we ask that the Secretary of the Provincial Board from which the applicant comes shall furnish the Secretary of the Dominion Dental Council with the names of two reputable dentists living in the vicinity in which the applicant resides; then the Secretary of the Dominion Dental Council forwards to these two dentists certain forms to be filled in, to be treated confidentially by the Dominion Dental Council. So the Dominion Dental Council has, by this means, on record for its confidential use direct answers to twenty questions that are submitted, from persons that are most likely to know. I do not know whether this is not perhaps an extreme measure, but we are in this singular position. We are not a corporate body, as the Dominion Dental Council, and we are not answerable directly to these secretaries or the holders of provincial licenses in any specific way. We are a body established by mutual agreement, to be governed by rules made by the representatives of the agreeing provinces, to be submitted only to the agreeing provinces. Any change in the constitution has to be submitted again to the agreeing provinces. So we are, I say, in a singular position in this respect, and though we may have adopted in this case what may seem upon its face rather an arbitrary measure, I think that in the end a great deal of good will come of it, for no one who is guilty of unethical practice will be likely to try and get the Dominion Dental Council certificate when he sees before him the questions which will be answered by reputable men of his profession in the district in which he resides.

The meetings of the Dominion Dental Council hereafter are to be bi-annual instead of annual, and business, therefore, will devolve more and more upon the Executive Committee. The Executive, consisting of the President, Vice-President and Secretary, has had the honor of being re-elected, and that, I suppose, can fairly be taken as evidence that their work has been conducted satisfactorily to the representatives of the different provinces during their term of office, and as a member of that committee I am compelled to express the hope that the work

will be carried on successfully during the interval between the meetings.

The next meeting will take place two years hence, although the President has power to call a special meeting at any time, and must call a special meeting at any time when asked to do so by a majority of the affiliated provinces.

I have no other matter to put before you at this present, but I feel that any of us will be very glad to answer any further questions upon the subject that may be of interest to you, in case you care to ask them. I have to thank you for listening so patiently, and hope that you will give every encouragement to the Dominion Dental Council, and that it will be a credit to us all.

DR. GUILFORD.—I have been intensely interested this morning. I feel that what I have learned in regard to this matter has been worth all the time I have taken in making this trip to Canada. In other words, I feel it is exceedingly valuable. We in the States were in the same position as Canada. *We* have not yet been able to reach this position. I am glad that the problem seems to be solved in this case. As I understand it, anyone who prefers to practice only in a certain province can go before the examining board in that province. If he wants to have a certificate which will enable him to practice in any of the provinces, he must go to the Board of the Dominion Dental Council, and pass their examination, and the different provinces which have entered the agreement. Too bad you are not a corporate body. What are you going to do?

DR. RYAN.—Corporate Boards who send representatives here are responsible for what the representatives do. If a man is unsatisfactorily treated he can get back at the Boards.

DR. DUBEAU.—We are much obliged to the Executive Committee for its report, and especially to Dr. McInnes, who made such extensive remarks. We heard with pleasure the remarks of Dr. McInnes. Regarding what I said this morning in my address, many friends in England told me that if we asked them to enter into negotiations for the establishment of a British Empire Dental Association, our request would be regarded favorably, so I hope that what I proposed this morning will be moved by someone and adopted, that the Committee be instructed to communicate with the British Dental Association and invite them to come to our next meeting in two years. Last year I invited them to come this year, but they found that the invitation was too short, but they gave us to understand that they would certainly accept it for our next meeting.

The President then adjourned the meeting until 8.30 p.m., at Laval University.

REPORT OF NOMINATING COMMITTEE.

Dr. Webster then reported on the nomination of officers as follows: Your Nominating Committee wishes to report that on account of some peculiar conditions, there will be a slight change in the Constitution. At all events, we think it unwise to decide now as to the best location for our next meeting. There are circumstances which we are now not able to get full knowledge of, but that will be obtainable later on; and as soon as that knowledge becomes obtainable, the Executive Committee can then make their choice of location. The city of Quebec has given the Association an invitation to meet there in 1908, and the Mayor of the city has sent us an invitation. The city of Ottawa would like to have our meeting. The city of Winnipeg, which was selected by quite a number, is not prepared to take the meeting. At all events, if we have the British Dental Association with us at our next meeting, their coming might influence us in some way to take it to a different place than we might choose at the present time. Also the Canadian Medical Association, which met with us four years ago, is likely to meet either in Winnipeg or St. John, or perhaps Quebec, on account of other conditions at that time, and if we could meet with them, we would be certain of getting a much reduced railroad rate. That might influence us. We might be coaxed by the Dominion Government to meet in Ottawa, so that for these reasons, we would suggest, and I would move, that the choice of place of meeting and date be left in the hands of the new Executive.

Again, on account of that condition, it is desirable, of course, to have an Executive Committee, or a large committee in the place of meeting, and since we do not know the place of meeting, it is best for us not to name these at all. Leave that also in the hands of the Executive.

The Executive Committee will then have the power of appointing five members in the city in which the meeting is to be held, and I would move that the Executive Committee be empowered to appoint five members to constitute a permanent Committee, also to appoint a Second Vice-President, who shall be the Chairman of the permanent Committee. This permanent Committee will have power to appoint its own Secretary. Their powers will be to organize and handle the whole meeting.

These are the suggestions we have to put before you. Somebody please second them. The above motions were then seconded by Dr. Hanna, and carried.

DR. THOMSON.—I did not hear Halifax mentioned. I would like to say that the subject of inviting the Canadian Dental Association to Halifax was discussed at our local meeting, and we felt that we would like very much to have them come in 1908, but we hardly thought it wise to try and attempt to entertain

them at that time. But we are pretty sure that we will be able to entertain them in 1910, and I would like to suggest that we have it on record that Halifax was mentioned at this meeting.

DR. WEBSTER.—It is just possible that Toronto would like to have this meeting, and the President of our Board has said that it might be very entertaining to have it in Toronto.

DR. LANTIER.—I would like to say a few words on behalf of Quebec. As just said, I have the honor to propose that Quebec City be chosen as the place of the next meeting of the Canadian Dental Association. As Montreal and Toronto have been heretofore chosen, it is only right and proper that Quebec should have its turn. (Reads from notes.) If I am allowed, I should like to speak in French, as I think there are a few of my confreres here. Has everybody understood what I have said?

SOMEONE.—Yes, splendidly.

I therefore move, seconded by Dr. Lemieux, that Quebec be chosen as the place of the next meeting of the Canadian Dental Association.

DR. MAGEE.—Will it be in order to move an amendment to this latter, by leaving it to the new Committee to take into serious consideration the invitation so kindly extended by the dentists of Quebec and seconded by the Mayor?

Amendment seconded by Dr. Spaulding, and carried.

DR. BARBER.—I think that if the circumstances are such that the Executive have not found it advisable to name a place or date for the next meeting now, our Executive is certainly composed of such men that they are probably better advised than we are, and that we had better leave it in their hands. It is, of course, very nice to get a letter of that kind from Quebec, and I should be very glad to go to Quebec. I think it would be far better to leave this in the hands of the Executive, and after six months have elapsed, they will probably be in a better position to meet this question, and we are certainly safe in leaving this matter in their hands. The only argument that I heard from Dr. Webster to change the ordinary course of things about choosing the place of meeting is that the railway fare would be reduced because the C. D. A. should meet in St. John. As far as that is concerned, I can assure you that the railway fares in 1908 will be such that it will be satisfactory to everybody.

DR. BOWER.—I think it is a good idea to get the opinion of the members present here, and it seems to me that they all want this Association to go to their own locality. There is a good sprinkling from Ottawa, and Ottawa has not been mentioned, and I would move that Ottawa be the next place for the meeting of the Convention.

DR. HANNA.—I desire to ask if the motion moved by Dr. Webster and seconded by myself was not submitted by us and recorded? I desire to ask if this is not the case? This being

the case, this is all out of order. A motion to reconsider that resolution is the only thing in order now to do business.

DR. WEBSTER.—All of these arguments were presented to us in the Committee. Dr. Chambers kept us late discussing the possibility of going to Quebec, and we have considered very carefully, and the best thing we thought we recommended. I think there is one question that may be lost sight of. It has been mentioned that in previous conventions there was always a place chosen before the close of the convention. We have to acknowledge that the fact is true. In these cases there was only one place that was mentioned with any degree of strength. It was easily settled. At this time there are three places, if not more, that are suggested, with strong advocates for the several places. I think it is only right that these places each have their claims presented to the Executive, so that they can consider them carefully.

DR. GARVIN.—Mr. Chairman, as probably you do not all know, I am from Winnipeg, and I would personally state that there is no place I would sooner have the convention in than in the city of Winnipeg, and I think if it were held there it would be a great success. At the same time, I do not think the city of Winnipeg is the ideal place for that meeting if the British Dental Association accepts that invitation, and I think the matter should be left in the hands of the Executive until the matter is presented to the British Dental Association and an answer received. Then they will be in a position to consider this matter intelligently. If the British Association do not accept that, why cheap rates from Europe to Quebec have nothing to do with it, and, therefore, there will be, or should be, more dentists from the West to a convention in Quebec than from England to Quebec, and as far as rates are concerned, there are other places to which the rates will be more favorable to the majority than the city named. It seems to me, therefore, that the only fair way, when inviting an outside Association, is to leave this matter with the Executive for the present.

DR. WEBSTER.—I will now proceed with my report. We have nominated for President, Dr. S. W. McInnis. Vice-President, we have to give you three names, Drs. Magee, Ryan and Trotter. We have also suggested that the Secretary-Treasurer be one person. That was suggested by the present occupants of these positions. We have suggested that Dr. W. G. L. Spaulding, of Toronto, be Secretary-Treasurer, and Dr. E. A. Doyle, of Calgary, Registrar. The Executive Committee, which is composed of one member from each province, with power to add in the place of meeting: Nova Scotia, Dr. McArthur; New Brunswick, Dr. Gorham; P.E.I., Dr. Bagnall; Quebec, Dr. Stevenson; Ontario, Dr. Webster; Manitoba, Dr. K. C. Cambell; Saskatchewan, Dr. Steel; Alberta, Dr. Strong. The above proposed by Dr. Webster, seconded by Dr. Morison.

Dr. Spaulding requested his name to be withdrawn as Secretary-Treasurer.

Dr. Hanna objected to the election of officers at present as not being according to the programme, and therefore out of order.

DR. DUBEAU.—I think that about half an hour ago I asked the meeting if they were in favor of having the elections now or to-morrow, and the reply was, "Now."

Moved by Dr. Thomson, and seconded by Dr. Webster, That the election of officers take place now. Motion carried.

Moved by Dr. Springle and seconded by Dr. Stevenson, and carried, That the Report of the Nominating Committee be received and taken up separately.

DR. THOMSON.—I would move that Dr. Frank Woodbury be President of this Association. He is a member who has done more for this Association than anybody else. Dr. McInnis now occupies the position of Vice-President of the Dominion Dental Council; Dr. Woodbury has no position, and I think it only right that he be offered the position of President of this Association.

DR. WEBSTER.—I understand that the reason why Dr. Frank Woodbury is not President of the Dominion Dental Council is that he has the distinction of having refused to be President of the Dominion Dental Council.

DR. THOMSON.—I would say that the reason he refused was because he had to be away a greater part of the time. He was going South, and the reason he is not here now is because he is away. I am sure he would accept the Presidency. I have been informed indirectly.

Moved that the nomination be closed.

DR. MORISON.—I think it would be a pity that we should have any division over the office of President of this Association. I think Dr. McInnis has been a very enthusiastic member of the Association since its inception some years ago, and, having been Vice-President last year, it would seem quite proper that he should step into the President's chair this year, and while I believe that Dr. Woodbury is quite deserving of the honor, still I think that it should go to Dr. McInnis this year, and at any rate I would like to see the vote for President a unanimous one.

DR. HANNA.—I would like to call attention to the fact that this is not a nomination; it is an amendment to the nomination, and should be treated as a regular nomination.

DR. DILL.—The Nominating Committee has merely suggested names. I do not think anybody is bound by them.

Proposed that the nomination be closed. Carried.

Dr. McInnis unanimously elected President.

Dr. Magee unanimously elected Vice-President.

DR. FRANCHERE.—I am very much surprised to see that there are no French names in the nominations. I do not think that French names will give any shame to the Council. French dentists, I suppose, are as apt to be on the Council as any of their English confreres. They have a good dental school; they are doing their best for dental scholars. I do not see why we have no French names among the nominations.

Dr. Stevenson withdraws his name from the Executive, and suggests that the name of Dr. Franchere be substituted for his own on the Committee.

After some persuasion, Dr. Spaulding, who had requested his name to be withdrawn from nomination as Secretary-Treasurer, consents to let it stand, and is unanimously elected.

Dr. Doyle unanimously elected Registrar.

The Executive Committee was elected as follows: Nova Scotia, Dr. McArthur; New Brunswick, Dr. Gorham, of St. John; P.E.I., Dr. Bagnall; Quebec, Dr. Lemieux; Ontario, Dr. Webster; Manitoba, Dr. K. C. Campbell; Saskatchewan, Dr. Steel, of Regina; Alberta, Dr. Strong, of Edmonton.

DR. DUBEAU.—It is customary to introduce the new officers. I am sorry they are not all here. However, I will ask Dr. Fournier and Dr. Nolan to introduce Dr. Magee.

The meeting then adjourned.

Dominion Dental Journal

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All Communications relating to the Business Department of the Journal must be addressed to THE NEBBITT PUBLISHING COMPANY, Limited, 44 Adelaide Street West, Toronto, Canada.

VOL. XIX

TORONTO, FEBRUARY, 1907.

No. 2.

CRITICISM JUSTIFIED.

It was rather unfortunate that the name of any dental office in Toronto should have been mentioned in the discussion of the principles of ethics at a recent meeting of the Toronto Dental Society. What might have been expected to happen has occurred. A dentist (whose methods of practice came up for criticism because they were so stoutly defended) is aiming to make capital in his advertisements out of the criticism, thus giving the lie to those who so earnestly defended his honesty. He speaks of little dentists uptown who want all dentists to charge as high fees as they do. He likens his business to that of Eaton's, where they buy in quantity lots and give the public the benefit. He states that he has bought 400 sets of Justi's pin teeth, which he will sell for \$7.50. He fails to say that he has paid perhaps less than \$1 a set, and is turning them over to the public with a net gain of 750 per cent. profit. Six dollars and fifty cents is a

fair profit on a one dollar investment. And so is three dollars and twenty-five cents a fair profit on a twenty-five cent set of English Deatoric teeth. This is the man who sells cheaply because he buys cheaply. He knows as well as any little dentist uptown that the cost of the teeth in a \$3.50 or a \$7.50 set of teeth does not materially affect the value of the denture.

A FALSE REPORT.

A false and damaging report has been circulated among the members of the dental profession to the effect that Dr. Linscott, of Brantford, had undertaken to manage the Painless Dental parlors in the City of Hamilton. Such a report Dr. Linscott wishes us to deny. He states that he certainly does not wish to be branded in that class by the profession. It is Dr. Caverhill who is managing the *parlors*.

Editorial Notes

By a report of the General Medical Council of Great Britain the application of Quebec Dental Association for interchange of qualifications was not favorably considered because of the matriculation standard.

THE Brant County Dental Society met in Dr. Wills' office, Dec. 11th, 1906, and the following officers were elected for 1907: President, Dr. A. Almon Babcock; Vice-President, Dr. W. J. Norris; Sec.-Treas., Dr. J. B. Lundy. The Society meets on the second Monday night of every month.

THE Lambton Dental Association meeting was held in the Vendome, on Monday evening, February 4th, Dr. Colter in the chair. Dr. Kinsman, Sarnia, gave an instructive clinic on manipulation of porcelain. This clinic was much appreciated, as was shown in the discussion following. Those present were: Drs. Colter, Kinsman, Bentley, Falconer, McKenna, Mullin and Callum, Sarnia; Drs. Colter and Wilkinson, Petrolea, and Dr. Houffman, Forest. The annual election of officers resulted as follows: President, Dr. H. F. Kinsman, Sarnia; Vice-President, Dr. C. Colter, Petrolea; Secretary-Treasurer, Dr. D. R. Callum, Sarnia.

W. B. SAUNDERS COMPANY, of Philadelphia and London, have just issued a revision of their handsome illustrated catalogue of medical, surgical and scientific publications. Beyond

question, this is the most elaborate and useful catalogue we have ever seen. The descriptions of the books are so full, the specimen illustrations are so representative of the pictorial feature of the books from which they are taken, and the mechanical get-up so entirely in keeping with the high order of the context. The authors listed are all men of recognized eminence in every branch and specialty of medical science. The catalogue is well worth having, and we understand a copy will be sent free upon request.

Correspondence

MONTREAL, JANUARY 19TH, 1907.

To the Editor of DOMINION DENTAL JOURNAL.

It was with great regret that I read the letter in the last issue of the DOMINION DENTAL JOURNAL, in which your correspondent undertook to defend the dental profession by his caustic condemnation of the paper prepared by Dr. G. Lenox Curtis and read at a session of the Canadian Dental Association last year. While I am not anxious to have my name appear in print, I feel that this letter cannot be allowed to go unanswered. Dr. Curtis practiced dentistry for a number of years and, no doubt, realized, from an unprejudiced standpoint, that in probably nine out of ten dental offices the laws of asepsis were not obeyed, and in many cases were absolutely ignored. In preparing his paper, his object, very likely, was to awaken thought amongst members of the profession.

If years of college training will not prevent men from conducting their offices in an unsanitary and uncleanly manner, well, then, some radical means has to be adopted to stir them up, and I claim that in this paper Dr. Curtis attained his object. While I myself do not agree entirely with Dr. Curtis' method of expounding his views, I deplore the discourteous personal attack made upon him, and feel sorry that the Editor of the JOURNAL would allow such a letter to be published.

Dr. Curtis is an Associate Editor of the DOMINION DENTAL JOURNAL; has proven himself to be a competent and successful oral surgeon; has done a great deal of original investigation and research; was generous enough to contribute to the programme of the Canadian Dental Association meeting last year, and deserves the thanks of the Association and members of the dental profession, instead of the vituperative abuse which he has received from your correspondent.

CHARLES F. MORISON.

14 Phillips Square.

Dominion Dental Journal

VOL. XIX.

TORONTO, MARCH, 1907.

No. 3.

Original Communications

PROSTHETIST'S RESPONSIBILITY.

BY GEO. H. WILSON, D.D.S., CLEVELAND, OHIO.

Read before the Toronto Dental Society.

"The prosthetic dentist assumes two serious propositions: First, as a surgeon, he takes the responsibility of deciding that it is expedient and proper to maim his patient for life by removing his natural teeth; second, as an artist, he assumes the responsibility of carrying his patient through the transition period (proximately a year) from the time the teeth are extracted until he is furnished with a permanent artificial denture without appreciable loss of form or expression of the features."

The invitation to meet with you this evening was accompanied with a request to present a paper discussing the principles involved in the foregoing propositions. I shall discuss them from the viewpoint of a prosthetist, and later shall consider them from the standpoint of a general practitioner of dentistry.

A prosthetist is one who practises prosthesis, and prosthesis (in dentistry) is the science, art and esthetics of restoring a lost dental organ or organs and their associate parts with an artificial substitute. The science is classified knowledge of the subject; the art is skilfully doing the work, and the esthetics is harmonizing of the instrument with the associate parts.

It is apparent that a dentist limiting his practice to prosthesis has no moral right (but the law gives him a legal right) to assume the responsibility of an operator or an oral surgeon and

extract teeth; his field of service is to build up or replace that which has been lost.

The duty of the dentist limiting himself to operative dentistry is to do all in his power to save the natural teeth, and when they have reached a stage at which he cannot make them comfortable and useful, he should send the patient to the extractor or oral surgeon to have the offending organs removed. The operator should never order a tooth extracted that he is able to restore to usefulness. He should consider the consigning of a tooth to the forceps an acknowledgment of his insufficiency. Often a single tooth may be so located or so out of alignment that it will be more of a detriment to the patient than its loss; but such a diagnosis should be arrived at by consultation between the operator and the prosthetist. It is possible that such a condition of the hard and soft tissues and oral secretions may exist that the usual methods of retaining an artificial denture will not serve the patient at all, when a single tooth, no matter what the location or inclination, might be of much value as a means of retention. Hence the condemnation of any tooth is a subject for serious consideration. It is well that every dentist should remember the rule: That the difficulties of inserting artificial dentures increases in the ratio to the number of teeth lost. This rule, the same as all others, may have exceptions; but they are not as common as the members of our profession seem to think.

To sum up and emphasize the statements on the first portion of the first proposition, we assert that the forceps and their use are not a part of the equipment of the prosthetic specialist.

Probably it was not expected we should give attention to the remaining portion of the first proposition, because it is stated as a self-evident truism; but nevertheless we desire to consider it because of the truth therein contained: "To maim his patient for life by removing his natural teeth."

This is a fundamental truth that should be indelibly impressed, upon the mind and conscience of every dentist whether he be an operator, prosthetist, orthodontist or surgeon. He is maimed for life, both from the viewpoint of usefulness and cosmetics. The patient can use only about one-fourth the comminuting force on a denture resting upon the mucous tissues that he can upon the natural teeth. Because of the decreased curve of the summit of the alveolar process in an upper edentulous jaw, and, for the concentration of energy in mastication, the molars and bicusps of the artificial denture are made much smaller upon the occlusal surface than the natural teeth; thus, much time is required to properly insalivate the food; hence the patient is robbed of many hours each year that he might apply to work or recreation, else indigestion and a shorter life are invited by imperfect mastication.

We should not, in our discussion, lose sight of the fact that even among those people who seek the services of specialists, there are pathological conditions presenting that are beyond the present science and skill of the most advanced operators, and that the comfort and health of the patient demand that certain or all of the dental organs shall be removed. These conditions may be the result of the early neglect or later indifference of the patient; or it may be in spite of the operator's best methods and efforts. However, the truism remains, that "He is maimed for life;" but it is not necessarily true that the dentist maimed his patient, although too often this is so. So long as there is legitimate work for the extractor, our pathologists and operators should feel a sense of humiliation because they have been thwarted in their conscientious efforts, and have not reached the goal of their ambition—that is, perfection.

We should remember also that the motive of the operator and prosthetist is somewhat different. The operator strives to keep each tooth in as nearly a normal condition, and for as long a period, as possible; while the prosthetist is striving to gain the greatest total service for the patient. This may be accomplished by sacrificing one or more teeth; but if through this use of the dental organ a greater amount of service and comfort can be rendered by the tooth in a few years than otherwise in a lifetime, the sacrifice is justifiable, yea, demanded.

The second proposition and its correlations are the normal sphere for the prosthetist. It is unfortunate that art has two distinct applications. The Standard Dictionary informs us: The arts are distinguished as the esthetic or fine arts, or arts of beauty; and the useful, industrial, or mechanic arts, or arts of utility. The useful arts engage the ingenuity of the artisan; the fine arts, those which call for exercise of taste and imagination, and which furnish the sphere of the artist. The term Esthetics denotes the theory of the beautiful which furnishes the basis of art; but it is the only word we have to distinguish the fine arts from the utilitarian, and it is not a perfect synonym.

Is prosthetic dentistry a utilitarian or fine art? We cannot doubt its utility, nor the ingenuity required in construction. Therefore we must conclude that the mechanical laboratory man is an artisan. We do not wish to be understood as speaking slightly of a good workman devoting himself to laboratory work, but he cannot justly call himself an artist. No dentist is an artist unless he uses taste and applied imagination. In order to do this the dentist must work for and with the patient, when, if he uses sufficient taste and imagination so that his creation blends and harmonizes with the rest of the face, and is a harmonious integral part of the expression, he is truly an artist. Thus we conclude that prosthesis is both a fine and an utili-

tarian art; and the prosthetist is both an artist and an artisan. The artist may employ an artisan to assist him; but he must remember that it is an impossibility for the assistant (no matter how gifted he may be) to render the service of an artist unless the patient is placed in his hands.

As an artist the prosthetist assumes several responsibilities when he undertakes to restore the dental organs and facial expression. He assumes to thoroughly examine or diagnose the case. This diagnosis must include more than a decision to insert a certain form of denture. It must include a just estimate of the condition of the hard and soft tissues and secretions of the mouth, and the hard and soft tissues of the lower half of the face. A mental picture should be conceived of the face restored to harmonious proportions, and judgment formed as to the possibilities of producing these proportions with our artificial creations.

So far as possible, by observation and inquiry, the prosthetist should learn the causes for the lack of development of either or both of the maxillæ and mandible. These deficiencies may be either the result of early extractions, developmental degeneracies or other causes. If an overdevelopment of either the maxillæ or mandible is apparent it should be given due consideration.

Attention should be given also to the personal equation, which has much to do with the success or failure of the operation. This factor is quite largely beyond the control (although not entirely) of the prosthetist. However, this factor will generally unfold itself as the work progresses; sometimes to such an extent that the prosthetist regrets having assumed the trust. In extreme cases of this kind it may be wise for the prosthetist to refuse to further serve the patient. In a gentlemanly manner, but frankly, he should inform the patient that their natures are inharmonious and that he cannot render such services as will be satisfactory to himself, and that it will be necessary for them to employ another dentist. However, because of his innate honesty and modesty the prosthetist will not say or imply that because he has not succeeded no one else can; another dentist may find the personal equation a minor factor.

Prognosis: If there are unfavorable conditions, and it is probable the patient will have more than ordinary trouble in acquiring the ability to use the appliance, he should be acquainted with the facts in the case. While it is not wise to discourage the patient, it is morally wrong to create ideas of success that cannot be made good. Honesty and frankness at all times will win in the long run.

As the practice of a prosthetist is a referred one (either referred by another dentist or patient), he does not have to assume all the responsibility for the artificial appliance. If the case comes from another dentist, as most of them will, it is justi-

fiable to presume that the case is beyond the scope of the operator and must be cared for by the prosthetist. If the prospective patient referred by another patient is not edentulous and is a patient of an operator, the prosthetist must consider at all times the interests of the operator. If any teeth or pulps should be removed, the operator should first be consulted. Such consultations will not only save professional misunderstanding, but may save pathological complications.

The second proposition states: "He assumes the responsibility of carrying his patients through the transition period (proximately a year)." The prosthetic specialist rarely has a case of this kind, for his patients are usually from the better class of operators, and the natural teeth have been lost one or two at a time, so that the transition from natural to artificial teeth is a gradual one. However, these exceptional cases do occur, and present several propositions for our consideration.

The first one to be considered is in common with all cases where the teeth have been lost; that is, because the origin of certain of the muscles of expression is upon the alveolar process, anatomical changes take place that cannot be restored; therefore the expression can never be perfectly restorted when resorption of the alveolar process has taken place. Fortunately these muscles are of lessor importance, but it is important that the denture be not so constructed that these deformities are exaggerated.

The muscles arising from the alveolar processes are: Compressor nāsi, Depressor alæ nasi, Lavator labii inferioris and Buccinator. As the origin of these muscles recede with the resorption of the process, it follows that the insertion of the muscle must be depressed or the muscle stretched; hence an attempt at padding out these muscles must be very judiciously done.

All the other muscles of expression arise at some distance from the changeable portion of the osseous structure, and are inserted in the orbicularis oris; hence can easily be supported in their normal position.

How soon after the extraction of the anterior teeth should they be replaced with artificial ones? They may be replaced immediately by taking the impression before the teeth are extracted and cutting the plaster teeth from the cast; the denture can then be constructed the same as though the teeth had been previously extracted. In such cases the artificial denture should be placed as soon as the blood ceases to flow. This method is decidedly advantageous in those cases where there is considerable exposure of the gum in laughing, because a tooth can be used having a root extension, which will occupy the socket of the natural tooth, and will much retard the resorption of the gum

tissue. In most cases it is best to wait until the swelling has subsided and the inflammation reduced before taking the impression. This will usually require from one to three weeks. It is a serious mistake for the patient to wait from six months to a two years after the extraction of the six anterior teeth in either the upper or lower jaw before having the artificial ones inserted. There is but one thing in favor of waiting so long a time, and that is possibly saving the expense of the temporary denture; while there are several reasons against its advisability. We will consider only the most important one from an esthetic point of view, the wasting or shrinking of the muscles of expression. It will be almost impossible to get the patient and friends to acquiesce in the proper conformation of the artificial denture after such a lapse of time. If for no other reason than this, the artificial denture should be inserted in two to four weeks. The patient should be instructed that if the denture hurts, to persevere in wearing it, but to report at once for relief.

Usually in from three to six months the tissues will have resorbed so much that it will be best to "line up" the plate, although some cases will not require this attention. Usually a denture inserted after the teeth have been out one year will be quit durable.

There seems to be no well defined idea as to how long a so-called permanent denture should be worn. It is the opinion of the writer that the best interests of the patient would be subserved if they did not wear any denture more than five or six years, unless upon examination it should be found there was perfect adaptation, and the base plate was of a non-absorptive material.

Compensation: We do not care to discuss the amount of the fee, but rather what should be included for the first fee. This can be stated by saying that when the denture is once adjusted the fee is earned and due. However, any subsequent trimming for adjustment or the relief of pain should not be charged for, otherwise the prosthetist may be open to the charge of working the patient for small extra fees. If there is any question of fees with the patient, he should be informed of just what he may expect as to expense.

As there are only a few dentists limiting their practice to prosthesis, it follows that most of the prosthetic restorations must be made by the general practitioner. The general practitioner is the operator, prosthetist and extractor combined in one, and his duty to his patients is always in the order named. His first and greatest duty is to save all teeth possible; his second duty is to restore lost teeth in as useful and esthetic a manner as possible; and his third duty is never to extract a tooth if he can avoid it.

DISCUSSION.

DEAN WILLMOTT.—The paper is now before you. I want to make a brief explanation before we proceed to the discussion. Dr. Wilson has presented to us an admirable paper from any point of view from which you may wish to consider it. I may say, however, for his information and for the information of the Society, that he did not quite grasp the scope of the text as we intended he should. That is to say, we had not intended that from that text he should discuss the question of specialism in prosthetic dentistry. In this country we have none who make a specialty of receiving patients from other dentists and doing prosthetic work as separate and distinct from operating work. That fact, however, does not militate against the interest, importance and value of the paper. All the suggestions are just as applicable to the man who does general practice as to the man who does nothing but prosthetic work. So that while the case was not presented exactly as we had expected it would have been, that is not material at all to the discussion or to the information which you may receive from it. As to the first proposition, the duty of the dentist as a surgeon in deciding whether it is expedient and right that he should maim his patient. We had not any reference at all to the technique of extraction; we were looking at it from the purely surgical standpoint, precisely as though a patient presented himself to the oculist for consultation as to whether an eye should be removed; it would be the duty of the oculist to consider the patient from every possible standpoint, and then from his special knowledge to form a decision as to whether it was expedient that that eye should be taken out. Precisely the same responsibility rests upon every dentist, young or old, when a patient comes with a request for the extraction of a tooth—precisely the same responsibility rests upon him as upon any other surgeon called upon to perform a surgical operation, and that responsibility ought not to be lightly undertaken or carelessly discharged.

DR. READE.—We have heard from Dr. Wilson an admirable and interesting and stimulating essay on prosthetic work, and I am sure we are all glad to know personally Dr. Wilson, for we have heard of him a long time by reputation. Facial expression depends a great deal upon the relation of the two jaws to each other. In its growth the upper jaw is moulded on the lower jaw, and the relationship is thus established between the two jaws. Now, one of the evils of extracting would be this: in the case of extracting in the upper jaw, the first plate absorbed is the external plate, then follows the internal; on a lower jaw the both plates are absorbed together. The absorption having taken place in the upper jaw, this jaw becomes relatively much smaller than the lower jaw, and Cryer gives an excellent description of

that in his anatomy of the face, and he shows the great change that takes place in the size of the upper jaw when teeth are extracted, necessarily changing very much the shape of the face. With the teeth being extracted there is quite a vertical space between the upper and lower jaw. To overcome this difficulty the individual tries to approximate the two ridges in the upper and lower jaw, which means a throwing forward of the lower jaw. If when these teeth are extracted, as Dr. Wilson has pointed out, an artificial denture is at once inserted, then the resorption does not take place to the same extent, because there is not the same irritation to the tissues and a very fair semblance to the former features may be maintained, and this will be more so the case if at frequent intervals new dentures are made. Now, there are some cases where it might be rather difficult just to know when to extract. I am not referring to individual teeth scattered here and there along the ridge, for of course that would depend upon the judgment of the extractor. But take the cases of pyorrhea. Now, if the teeth are allowed to drop out from this disease, the process is already absorbed; if it were not so, the teeth would not fall out. Then the gums are soft, spongy and large, which is not a very good condition in which to set a denture. I just want to say one thing more and give others a chance. In regard to the value of the teeth, of course we all admit that teeth are of great value, if they can be retained, to the whole system for nutrition sake, for the welfare of the individual, so that they may live a longer and better life. But then, does that mean that the teeth are of the same value or are considered of the same value as a finger, toe or eye? I don't think we can place the same value on them at all, relatively, because it for no other reason a tooth can be replaced more perfectly than any of these other appendages, and for that reason it is not of the same value, and, as far as the law is concerned, I am sure the law does not look on them as of the same relative value.

DEAN WILLMOTT.—If the Vice-President, Dr. McLaughlin will consider himself in the chair and keep order for me, I want to offer a few remarks in this connection. (Applause.) Let me say first of all, I don't propose to traverse the whole question of the replacement of lost teeth, or prosthetic dentistry. I want to confine my observations during the few minutes I shall trespass upon your attention to one particular aspect of the duty and responsibility of the man who undertakes prosthetic work. Dr. Wilson has spoken of restoring the expression, and I think he has very correctly stated the case when he says the perfect expression can never be restored if it is once lost. The question I want to discuss to-night, with your permission, is the retention of the expression, not the restoration of it. The retention of the form and expression of the face during this transitional period

so that when the period is completed, for all practical purposes, your patient presents the same aspect to an onlooker that he did before you commenced to operate at all. That can be only proximately possible, and yet I think it is very proximately possible. That it is possible, the conditions being favorable, for the competent dentist to carry a patient through that transition period so that when fitted with the permanent denture there is no appreciable change of expression of features. Do we do that? Well, I am bound to say, in very few instances. Some cases are peculiarly favorable, and there are a few cases, a small percentage, in which the fact that the patient wears an artificial denture is not immediately observable on casual intercourse, but these cases are comparatively rare; a very much larger percentage of cases are very noticeable to anyone who takes the trouble to observe. I think "false" is a term we should never use as applied to teeth; they are artificial. I want to suppose this case, as a favorable one, for consideration: We have the wife of a millionaire; money is no object; say 38 to 40 years of age, passably good-looking and well preserved; but she has come to that condition, so far as her teeth are concerned, when it is her judgment, and it is the judgment of her dentist, and possibly the judgment of others in consultation, that the wise thing to do is to remove what remains of her natural teeth and replace them with artificial ones. Now, how may she be carried through that process, which will take approximately a year, without appreciable change of her expression? This, I assume, is one of those favorable conditions in which the patient is willing and in which the dentist has the skill, and in which money is not the question immediately concerned, as it unfortunately very often is. When we speak of expression, what do we mean? As I understand it, we mean the whole make-up in the form and arrangement of features which gives an individuality to one face as compared to another. On what does that depend? On the bony structure first of all, and then the form and arrangement of the soft tissues over the bony structure. These are moulded over the skeleton, and the flexible parts move readily over the bony structure, upon which they rest. If the bony structure in one individual differs essentially in form from that of another individual, then the expression of these two individuals will be essentially different; and if the form of the mouth and the form of the nose and the arrangement of the eyes are essentially different in one individual from those in another, that constitutes a different expression. So that the variety of expression depends upon two things: The form of the bony framework over which the soft tissues are moulded, and the form of the soft tissues themselves, and in a combination of these we have the individual expression we are proposing to retain. How shall we retain it? First of all, in my judgment, a very impor-

tant point is to retain a normal relation between the two jaws. I think I am not exaggerating at all when I say that there are not five per cent. of the patients who wear artificial dentures, either upper or lower or both, in which the jaws are in normal and natural relation to each other. The bite is almost invariably closed, and closed to an extent which no one appreciates that has not given some consideration to the subject. I presume where a patient of middle age has lost both the upper and lower natural teeth and the normal absorption has taken place, that the normal separation of the alveolar ridges will approximate an inch, a little more, possibly a little less, but they will approximate an inch. In how many cases of patients wearing artificial dentures when they are in position and the teeth occluded are the alveolar ridges separated by anything approaching an inch? There is a great deal larger percentage that are not separated three-eighths of an inch, with the result that the patient has the appearance of premature age; they look from ten to fifteen years older than they ought to look. Men can hide that to some extent by wearing full beards, but women cannot hide this loss of esthetic result by any proceeding of that kind, and for that reason it is perhaps more important, as well as for other reasons, that special attention should be given to ladies' cases in the retention of expression. I observed just now that the preservation of the normal relation of the alveolar ridges to each other is at the very foundation of all retention of the normal expression. How shall we do that certainly? There are very few cases in which we are called upon to extract, for the purpose of inserting a full upper denture, in which some of these teeth have not been previously lost. In most of these cases the bicuspid will have been lost previously, and in many cases the first molar. I would suggest, with a view to retaining the normal relations of these maxillæ to each other, that, before we do anything else, we take an impression, make a model, and upon that make a trial plate of some rigid material, and then, with a rim of wax, put it back into the mouth and have the patient close the lower teeth upon the wax, which fills these spaces so that the impression of the lower teeth is made in it. Then we take an impression of the lower jaw and make a model. We now extract the teeth and in the course of a week or ten days, when the inflammation has subsided and the sharp angles a little rounded over, we take an impression and make a model of the upper jaw, and upon that we put our trial plate, which will fit accurately on the vault, and into those spaces where the teeth had been previously extracted. Into the impressions made in the wax by the lower teeth, we fit the plaster model of the lower jaw and transfer the whole to an anatomical articulator. After all this is done, what have we secured? An absolutely accurate articulation to begin with. It is precisely the

articulation that existed before the teeth were extracted. We have also secured the bite. It is quite possible, in the case we have supposed that the bite is slightly closed, from the partial loss of the crowns of the posterior teeth. We open that bite to the extent of a sixteenth of an inch, possibly a little more; and now we have got our plaster casts in precisely the same relation to each other that the maxillæ were in before this destruction of the tooth tissue took place. We have, therefore, the first desideratum for retaining the expression. Now, as to the next step, the expression, so far as movable soft tissues are concerned, is formed by the movement of these muscles over the bony tissue. All these elevator and depressor muscles have their origin upon the maxillæ, upper or lower; they all have their insertion in the orbicularis-oris muscle which forms the lips. When these soft tissues were stretched over the framework that nature provided we had the normal expression of that individual. Now, by the extraction of these teeth, we have made a very material change in the form of that framework. These alveolar ridges, also, are going to shrink towards the apex of the sockets very largely; they are going to shrink from the labial and buccal aspect towards the lingual aspect; they are going to shrink slightly from the lingual toward the labial, but not to any great extent. Just to the extent that these changes take place, the support upon which these soft tissues rest is gone, and the soft will follow the hard tissues if we permit them. If we are going to retain the expression we must prevent that. In every normal case of the relation of the maxillæ, one to the other, I think that these provisional dentures should carry an artificial gum. That is pretty radical teaching, I know, but if we are going to retain the expression—I am going on the supposition that my millionaire's wife does not wish to change her expression; that is to say, that at the end of the year, when the operations are completed, she has got it as she had it at the beginning of the year and as she has had it all through the year. Unless there is something abnormal in the relation of the upper to the lower maxillæ, all these, what we term temporary, these provisional dentures, should carry a thin artificial gum, so that the artificial gum all around from the heel of the upper jaw on one side to the corresponding part on the other side shall support the overlying muscles and keep them in practically the position they were before the teeth were extracted. This involves, I am prepared to admit, a slight padding. That is to say, we are making the framework upon which these soft tissues temporarily rest a little larger than it was in a state of nature; but this is scarcely observable. When we come to replace these at the end of the year we can reduce that extended framework back again to its normal size, and the soft tissues will very promptly follow. We can reduce that very much

more readily and have the soft tissues follow it than we can increase the size of the framework that supports these soft tissues when they have once shrunk and fallen in. What do we gain by putting in this thin gum all around the alveolar ridge? We support the whole of the muscles of expression, and we retain them for all practical purposes just where they were when the teeth were in place. The gum recedes, following the absorption of the alveolar walls, and leaves a space in that case between the artificial and natural gum. If that space becomes so great that there is a danger of the tissues falling into it from above, then it ought to be padded out at the end of two or three months; but usually that will not be necessary. If this artificial gum rises high enough on the alveolar ridges it supports the lips and cheeks in the same relations to each other that they were before the teeth were extracted, except to the extent of the thickness of that thin artificial gum. Every intelligent patient who has teeth extracted for replacement is prepared for a period of some discomfort and the additional discomfort of this thin artificial gum is not going to be material. If they could be persuaded that by putting up with the very slight padding for the time that this provisional denture is worn, they could secure a perfect retention of their original form and expression, they would be very glad to do it. I think there is a place here in prosthetic dentistry for the use of celluloid. For these provisional dentures it is admirably adapted. It is not a very permanent piece of work; in most mouths it undergoes disintegration; but it is quite lasting enough to serve all the purposes of the provisional denture, and in most cases it is very desirable, so far as the patient is concerned, it should give way in about eight or nine months so that they cannot wear it any longer; otherwise they go on and utterly destroy their expressions. It is so near the color of the natural gum that even when it is exhibited in laughing and talking, it is scarcely appreciable, and it is so tough that it is not in danger of being broken. By the judicious use of celluloid we can make this thin artificial gum the framework upon which the soft tissues of the mouth are supported until the time comes to insert a permanent denture which will permanently retain these in position. We are speaking now of the upper denture. I think it is wise, to begin with, to open the bite slightly beyond the normal relation, because the palate, or vault, in an upper denture carries the artificial denture. We talk about the upper teeth going up; as a matter of fact, when there is occlusion in the region of the molars they do not go up; the palate does not change, and the palate of our artificial denture rests on the natural palate at the end of six months as it did when we first put it in. The gum and the alveolar ridge will go away from the portion on which it rested to commence with, but unless the denture is tilted by the anterior

occlusion of the teeth in the lower jaw, it leaves a space always between the alveolar ridge and the cervical end of the artificial teeth. As a rule, the teeth do not go up; what does occur is that, in the absence of an artificial gum, the support of the lip is taken away and the lip drops down so that it hides the teeth. I think we want to get rid of the idea that where there is molar occlusion the artificial denture goes up and disappears; the lip comes down because it is not supported, and, to some extent, hides the teeth. I think this paper is worthy of a full discussion, and I shall be glad to hear from any member of the Society.

A MEMBER.—Mr. President, I would like to ask Dr. Wilson if he has ever made any use of paraffine. I believe ophthalmologists use it in general surgery to a considerable extent, and it struck me perhaps we might be able to make use of that in some way, and also in connection with the difficulty of providing for the insertion of those muscles on the alveolus.

DR. McDONAGH.—I cannot forget that for about twenty years I have had the pleasure of trying to restore lost expression. Probably I will never have that chance again in the same way. But regarding the loss of tissue through the action of pyorrhea, I have made a certain study, and I must differ to a certain degree with Dr. Reade, who said that when teeth were lost through pyorrhea the alveolus was entirely absorbed and spongy tissue was left instead. Now, I think if we will notice the changes that take place, take, for instance, in a mouth where there is only one tooth attacked by pyorrhea so-called, that tooth becomes elongated. Lime salts are built in after the tooth has left its socket, and therefore the alveolus has not been dissolved to the extent we sometimes suppose it has been. It is quite true that when a mouth has lost all its teeth through the action of pyorrhea that the alveolar ridge is not in the best condition for retaining an artificial denture. That is due, of course, in a certain degree to the loss of the alveolus during the time the teeth are being exfoliated. The teeth are lost, not all at the same time, but one after another, and there is a certain amount of bony tissue built up which holds the expression. I am not defending the disease at all; in my practice I combat it. But in my practice very often it has been necessary for me to reduce that elongation to bring the teeth back into their normal sockets; and it has been brought to my notice so often when they are brought back into their place and become solid, if all the teeth have not been elongated the gum tissues and the alveolus seem to be just about where they were before the tooth started in its downward or upward course. Dr. Wilson said that by using artificial teeth with elongated roots we prevented to a certain degree the absorption of the alveolus. That is true. If you insert a porcelain root into the gum the alveolus will not be absorbed to anything like the degree—that is,

if you don't insert it too far—that it would be if you had not inserted the porcelain root. I saw a case when I was in general practice some two or three years ago of a tooth which was extracted, and I put an artificial tooth on a plate and extended the root into the socket, and not only did the alveolus not absorb, but it grew right down, when I cut the end off the porcelain there was really no absorption of the alveolus at all when the case was ready for a bridge. There are one or two here now who saw the case. Another point which I have noticed, and you probably also have noticed—you who have paid attention to the matter—you make a provisional artificial denture according to the model you get from taking an impression immediately after the teeth have been extracted, and let the patient wear that artificial denture for a year. At that time, when you want to make your permanent denture you will find that the gums have not healed smoothly and uniformly; that they will have hills and valleys, as we might express it, to correspond with your artificial denture. Therefore I might say, although I am not an expert authority on the subject of prosthetic work, that it may be possible to carve your provisional denture in such a way that you could have an ideal alveolar ridge to fit the permanent denture to.

DR. McLAUGHLIN.—The proposition that comes before us of the responsibility we take in maiming our patient for life by the extraction of say the six or eight anterior teeth in the upper jaw. I don't suppose there are very many practitioners in the room to-night who would wantonly do anything of that sort; that is, they would not extract those teeth for especially a young man or young woman without very serious consideration. A good many of us some time during our practice have succeeded in maiming our patient by extracting not the whole of the six anterior teeth, but perhaps one of the six anterior teeth in a young patient's mouth. I think the practitioner who without very serious consideration for a young lady of say 22 or 23 years of age extracts a lateral or possibly a bicuspid or any of the six or eight anterior teeth is to a great extent maiming that young lady for life. The statement was made by Dr. Reade a little while ago that perhaps it is not so serious a matter to take out an anterior tooth, and that the patient is not maimed as much as if one of the toes had been amputated. That, to my mind, is a debatable question, and perhaps if you put the question before a young lady of eighteen or twenty summers, and said: "Would you rather have a lateral tooth of yours extracted, or would you have a little toe amputated?" she might want to go home and ask her father and mother about it before she decided. Dr. Wilmott said something about the artificial gum passing around the entire upper denture. I think that is an admirable idea as far as the

theory is concerned, and Dr. Willmott certainly succeeded in gaining his point in the minds of us all, that it would retain the expression as far as padding would be possible to do it. But Dr. Willmott started out with the idea he was dealing with a millionaire's wife, and I don't know whether with a millionaire's wife or any other man's wife the Doctor could succeed in persuading his patient—I don't know whether any of us could succeed in nine cases out of ten in persuading our patients to wear a denture just of that nature for eight or nine months. That is a question that came up in my mind as a secondary thought. The first thought was that it was a splendid idea, but the second thought was this: "Is it really practicable?" As to the lip elongating, I really don't understand that point yet. If I understood the Doctor correctly, the lip really elongated and covered the whole of the denture, and that was the reason the denture appeared to sink into the mouth. Now, I have sat in audiences, and I suppose you have all sat in church and you have looked up at the choir gallery sometimes, and you have studied the faces of the young ladies—the older ladies in the choir—and you could pick out in nine cases out of ten those who are wearing upper artificial dentures, and how did you do it? I have made a study of it sometimes. I don't know how accurate I was, but I generally formed my conclusion on this basis: From the shortness or apparent shortness of the upper lip. I always thought that after the teeth were extracted a number of years the upper lip really shortened. I may have been wrong all these years. If I was, I am open to correction. That was the idea I had, and it rather knocked that theory somewhat silly, as the boys say, when Dr. Willmott said the upper lip really elongated, and that was the reason the denture appeared to be hidden in the mouth.

DR. CAEZAR.—I wish, like the President and Dr. McLaughlin and others, to congratulate the essayist upon his paper. It is an excellent paper. I could take no exception to it. It was something for us all to learn. I have to differ a little bit with some of the speakers. Dr. Willmott, for instance, is going to supply an artificial gum on a temporary mouth. It is nearly impossible to put an artificial gum on most of these dentures made on freshly extracted maxillæ—I think it is nearly an impossibility in many cases. Your patient will not stand for it. You can't do it unless you use celluloid, the most villainous material that was ever made to put in a patient's mouth. It is almost as bad as our city water, I think, about a month after you insert it. I have ceased to have it around my office. You could almost tell the patient was wearing a celluloid denture when he came in the door—horrid things. With regard to Dr. McLaughlin's jumping on my friend here, I have to differ with him. I have one patient in this city, and he is not a millionaire—I don't happen to have many of these millionaires—that has been so unfortunate as to lose his toes, and he would rather

lose every tooth in his head than have lost those toes. We don't want to extract teeth at all. I don't suppose there is anybody in the room but what appreciates the preservation of the natural teeth. I seldom extract teeth; I don't think I use my forceps once in ten days. I can't remember when I have extracted a full upper denture. I have had one or two cases in probably a year, but I have sent them down to a specialist, and let him have the pleasure. I think we should all strive to save the natural teeth and fill them as long as they can be filled; and as some person has said, I think it was Dr. C. N. Johnson, the crowning of them is the last ditch in the race. In cases I have taken the impression and removed one tooth from the plaster model at a time; had my plate on the model and set that tooth up before I took another one off, and I in that way retained the original expression of my patient, and kept the length of the bite as it was.

DR. WEBSTER.—Mr. President: I am not a prosthetist, nor do I know very much about it, but I know enough to appreciate Dr. Wilson's paper. He has taken up an aspect of the subject that we do not often hear discussed at Dental Society meetings; and then the discussion has got along to such a point we didn't know there was so much that was interesting in it, and so much difference of opinion about artificial dentures; we used to think the subject was rather a dry one. There is one little expedient that might sometimes be tried—I tried it once myself with great satisfaction to myself and the patient—that is, take an impression of the face before you extract any of the teeth. What does it give you? The exact form of the mouth, the exact relation of the lips, the exact relation of the chin, the nose and all of the parts. You can't go wrong then. Then, with your provisional denture or permanent denture build out to it. That impression can be made to include the whole of the unchangeable parts of the face and held exactly in position, and if you desire you can blacken the inside of it, and the patient's face will indicate when it is not filled up to it. It is not difficult at all. (Applause.)

DR. ADAMS.—Mr. President and Gentlemen: I must say that I appreciate Dr. Wilson's paper, and I have certainly enjoyed the discussion, although there are some things that have been said that I take exception to. I think the essayist made mention of the fact that by using teeth with elongated roots and extending them up under the gum prevented a recession of the gum, and I believe some others made remarks along that line. My experience has been just the opposite—that it causes more absorption. I used to do it, but I wouldn't do it now, and I would like to stand up for Dean Willmott in this theory, the theory of using a very thin gum on the outside and putting the plate in as soon as possible after the alveolar ridge is rounded off; and I think the only thing to use in most cases is a celluloid plate, which, in my

opinion, although I haven't used it very much, is a very good thing. Now, as to disfiguring patients and maiming them, Dr. McLaughlin seemed to think we maimed them more by extracting an anterior tooth. I believe that you maim a patient more—that is, a patient under 25 years of age—by extracting some of the posterior teeth, and I would cite a case, and I think some of you perhaps saw models of it exhibited some years ago, of a young fellow under 18, who had, I think only two teeth out on the upper jaw on one side and he had three teeth out on the lower on the other side. The upper teeth came up on one side and the others came down on the other, and he hadn't anything to chew with at the back, and it meant an immense disfigurement to him and an irreparable loss; he hadn't teeth he could chew with on either side. What happened? His lower teeth came up till they stuck into the gum, and his upper teeth came down, extending away down below his lip. I would very strongly object to the extraction of any tooth, especially a first molar, for a person under 25, except in regulating cases where it would be an odd tooth. There is too much absorption when the patient is young.

MR. PRICE.—I agree with the gentlemen who have discussed the question on the excellent paper before us by Dr. Wilson. There is some encouragement in the thought particularly that there is some hope of preserving the natural expression of the face. Now, I would like to ask a question for discussion, for my own enlightenment, and that is, Is it possible, with all the care we may exercise, to perfectly retain the facial expression? In orthodontia we bring pressure to bear on the hard tissue and cause the hard tissue to move after the natural teeth are extracted and the provisional denture is put in, and there is pressure brought upon the hard palate. Is there not a change in the bony structure of the face? Why do we see deep lines forming at the sides of the nose? We have heard sometimes that the base of the nose is depressed somewhat, and there is considerable change in the bony structure of the face. I had supposed there was more change than the gentlemen who have discussed the subject have inferred, and I would like to hear a little more from yourself or others, if there is not more change than in the alveolar process, and what change there may be in the lower maxillæ because of the extraction.

DR. WILSON.—There are several thoughts that have come to my mind in the few things I could hear to-night, and one of them would be, What constitutes the expression? Physiognomists tell us that the expression is of the soul through the anatomy; it is not the anatomy, but it is of the soul, that is the life, through the anatomy. The anatomy simply gives expression, or brings out the appearance that we see. We may see that a person is happy or sorrowful or distressed or displeased. That expression comes

out through the anatomy, but it is the expression of the soul or life within. How can we bring that out through prosthetic work? If we put in an appliance in the mouth that distorts in any way so that the soft tissues perhaps cannot assume the position that they should in giving expression to the thoughts in the mind, then, of course, we have not the expression. It is possible that the appliance is such that it is not well retained, and secondly, certain muscles have to be exerted to retain that plate, then it is simply impossible for the individual to give expression to the thought by expression through the features of the face. Another point I would call attention to is, What are we trying to produce in the face? Are we trying to reproduce exactly what nature had done, or the conditions that we had at the time we were called upon to render the service, or the time just before they sustained the loss of the teeth? That is a question. How many people can you think of among your patients that you know that have not the expression, the appearance, the anatomy of the face that nature designed they should have? Why? Because perhaps in early life they were unfortunate enough to lose certain of the molar teeth, or perhaps the bicuspids, so that the face was never developed. Then there is a lack of harmony in the face, and we recognize at once that it is the natural condition to their friends, but it is not the harmonious face that nature designed that individual to have. Now, how far should we go in bringing out or attempting to bring out the condition that nature designed? I believe that in our study we should endeavor to approximate; we cannot go to the extreme; that would be impossible; but it is not necessary, it seems to me, that we should keep the individual in that deformed condition that they were when they came to us. It is a question of judgment how far we can go and how far we cannot. That is where art comes in, esthetics, the imagination, and when we apply it we get the real art and we are the artists. Another thought that occurred from our President's remarks that I could hardly agree with, and that is in regard to the denture being settled, or having a fixed place in the mouth. For instance, the upper denture, that it rests upon the vault, and, of course, cannot go upwards. Do we not remember of seeing cases where the plate has simply been imbedded a sixteenth of an inch so that the visible portion of the fossa that hangs down quite a decided distance from the roof has been simply imbedded and carried forward? Have you not seen those?

DEAN WILLMOTT.—In that case the anterior lower teeth struck so that it was tilted forward.

DR. WILSON.—The whole thing is, Is it imbedded simply because of that pressure? In all orthodontia we shape and mould the processes by pressure. We have a heavy pressure, with the

denture placed upon that. Why shouldn't we mould that as well? Perhaps not so readily in an old mouth as in a young child's mouth. So that I believe our dentures do go up quite decidedly upon the upper jaw; consequently the effect of the lengthening of the lower lip is not the effect of the lip going in and going backward, but partly due to being pressed upward into the process very decidedly. There were two questions one gentleman asked. One was with regard to paraffine in filling out the tissues—contouring—that is something I have not had any experience with whatever. It is a subject I thought I should like to study, but I haven't the courage to attempt it upon my own responsibility. I should want to take instructions of those who have had quite extensive experience in that line. It seems to me it is one in which we may do a great deal of harm, and it would be possible to injure the expression and set up an inflammation we did not want. Then, cutting the muscular attachments. That is a subject I have never favored. I do not believe it is right. In fact, I cannot conceive wherein, as a rule, it would be necessary to cut those muscles. The point it needs the most filling in is at the cuspid eminences, and if you will place your fingers in the triangle you will notice the cuspid root has quite an impression upon that triangle. That is one of the first things to consider in restoring the expression, and that is to carry our plate high at that point. Then the incisive fossa is decidedly depressed, and in it the origin of the two muscles extending to the soft end and wing of the nose, so that as the process recedes the origin of those muscles is drawn backward, drawing the nose forward and depressing. That muscle must either stretch or we have that depressed condition. If we fill in the plate in the secondary part and carry it a little high over the incisive fossa we are simply putting those muscles upon the stretch and drawing the nose down more or those muscles must be still more stretched, so that we need not place any but very little filling at that point. So that with the various muscles we should be careful that we carry them out where they will permit. When I speak of it being impossible to restore the perfect expression I mean the highest ideal of restoration, not approximately; because approximately we can bring it very close, but we can't bring out the highest ideal. That is the reason why I contend we should never do any extracting of the anterior teeth if we can possibly avoid it, because we cannot bring the expression perfectly, but we can approximate, certainly. Another point I would speak of that comes to my mind now is the condition of natural expression. We have an individual that has a great protrusion of the upper jaw, so much so that the mouth is entirely out of harmony. Should we attempt to restore that, or should we attempt to have the process recede and to carry back the condi-

tion to get it more in harmony with the rest of the face? These are questions for us always to consider. As to the matter of using the gum portion of the artificial denture, I think in nearly all cases where it is a full denture it should be used, and there are a few cases when there is overprominence it would be better to reduce that condition. But, as a rule, I think it is well to use the gum portion and keep it, where the recent extraction has taken place, as thin as possible, or if we start in without an artificial gum, in a very short time we begin restoring the gum; but there are a few cases where, I feel, the expression of the individual has been very much improved by never using an artificial gum, but they are rare.

REMAKING A PLATE WITHOUT A NEW IMPRESSION.

BY J. NEELANDS, L.D.S., LINDSAY.

A lady, living in the Province of Saskatchewan, recently sent a full upper denture to be repaired or remade. They were so badly broken and in so many pieces that it was found impossible to repair with any hope of permanency. The plan adopted may not be new to the profession, but I decided to make a model by sticking all the pieces together with sealing wax. Some parts were entirely gone, and had to be substituted with wax. Then the plate was invested in the ordinary way in the flask. When the plaster had set, the sealing wax, which held the pieces together, was removed and a thin coating of beeswax was placed over the old rubber plate to make allowance for scraping and polishing. When this was done the old plate, teeth and plaster surrounding was freely coated with oil. The upper half of flask was then filled with plaster. It was let stand only about ten or fifteen minutes so that the plaster would not set too hard around the teeth. The flask was then separated by placing a blade of a knife between the parts, leaving a nice impression of the teeth in the plaster of upper half of flask. The lower half of flask, containing the old plate and teeth was held over a spirit lamp, when the teeth were easily removed and replaced in their respective positions in the plaster impression in upper part of flask. There was no trouble in picking out the old rubber plate when heated. All that had to be done was to pack and vulcanize in the ordinary way. The plate was mailed to the patient, when she wrote, expressing the greatest satisfaction, and saying they were a splendid fit.

HEREDITY AND MALOCCLUSION.

BY S. G. RITCHIE, B.A., D.D.S., HALIFAX, N.S.

A glance at the dental literature of the past year will convince the most sceptical that the last word has not been said upon the cause or causes of malocclusion. Those who have made orthodontia a specialty are inclined to believe that heredity plays little or no part as a factor. Undoubtedly they are right in their contention, but so far as I have seen their arguments to support it have had too slender a scientific basis to force conviction upon those who think differently. Eliminate the ignorance of the first principles of heredity; the confusion which has arisen through the misuse of terms; the practical difficulty of distinguishing between "modifications" and "variations," and the solution of the problem is self-evident.

The essential facts of heredity are few in number, but so accurate must be the reasoning based upon them that while the memory is not taxed, the reflective powers are exercised in the highest degree. To these, then, let us turn.

According to Prof. Arthur Thomson, "Heredity is a term for the relation of organic or genetic continuity which binds generation to generation." Reid puts it this way, "Heredity is that science which deals with the organic relationships between progenitors and descendants." Defined in a less technical way, heredity is a quality or property of the germ-cells, in virtue of which certain characters which have appeared in parents or ancestors are transmissible to succeeding generations.

Clearly, then, our study of the subject must begin with the germ-cell. The typical germ-cell is made up of a body and a nucleus. The intimate structure of these does not concern us; it is sufficient for our purpose to state that "the bearer of heredity," the so-called germ-plasm, has been identified with the chromatin of the nucleus. Furthermore, it may be said that the nuclei of the sperm and ovum are equivalent, that is, they are equally bearers of heredity.

Returning for a moment to the definition of heredity, you will notice that the essential idea is continuity. Indeed, it is not too much to say that unless there was something physically continuous heredity would be impossible. It was for this reason that Weismann introduced his theory of the "continuity of the germ-plasm." He used the term "germ-plasm" because he was unable to demonstrate satisfactorily the continuity of the germ-cells. That these cells *are* continuous has since been shown.

Now, to follow clearly the continuity of the germ-cells it

becomes necessary to have before us a continuous panorama of the course of development from generation to generation. The old belief was that in some way the germ-cells were formed by the individual. After fertilization they gave rise to new individuals, who in turn formed more germ-cells, from which arose the next generation, and so on. This belief, inadequate as it is to explain the known facts of heredity, is still the popular one. Nevertheless, it is certainly erroneous. Modern embryology has shown conclusively that the germ-cells precede the embryo, and that they have their origin neither in the embryo nor in the adult, but in pre-existing germ-cells. The demonstration of the continuity of the germ-cells, as *cells*, is to the credit of Dr. Beard, Lecturer on Comparative Embryology at Edinburgh University. According to his researches a *résumé* of the true processes of development is as follows:

1. The fertilized ovum, or so-called primitive germ-cell, as the result of division gives rise to a number of primary germ-cells.

2. In one of these latter, and one only, the embryo has its origin. Absolutely nothing suggests that this cell is unlike the others. Apparently they are all alike, a most important fact from the standpoint of heredity.

3. The remaining primary germ-cells migrate into the embryo during the course of development, giving rise (as a rule) to secondary germ-cells, incapable of independent development, but which go through the various processes which result in eggs and sperms.

4. By the union of these eggs and sperms with those of other individuals a new cycle of development begins, and our panoramic view is complete.

Once you have grasped the course of events as outlined above, the hardest part of our task is over; the mystery which has shrouded the many known facts of heredity at once disappears. That any character, whether old or new, which has once made its appearance in the germ-cell, tends to be transmitted should now be clear. Doubtless it will also be obvious that in problems of heredity the germ-cell, or rather the germ-plasm, not the individual, is the real subject of discussion; for, as Reid says, "The individual is nothing more than an incident in its career—a dwelling-place where shelter and nutrition is obtained. We judge of the nature of the germ-plasm and of the changes it undergoes by the characters of the houses which it builds and temporarily inhabits." Let us now for a few moments turn to the characters as a whole which find expression in each and every individual. On examination it will be seen that these, in theory at least, are separable into two distinct classes—the inborn and the acquired. This classification, for reasons which will appear later, is immensely important from

the standpoint of heredity, and I cannot impress upon you too forcibly that the terms "inborn" and "acquired" and others about to be defined, should be used only with the restricted meaning which biology has attached to them. Certainly no argument based upon their misuse should commend itself to us.

An inborn character or trait, the terms being synonymous, is one which has its origin in the germ-plasm. It arises because the germ-plasm is so constituted that it tends, under suitable conditions of shelter and nutrition, to cause the germ-cell to develop into an individual having that character. "Thus a man's head is inborn. It arises because the germ-plasm in the fertilized ovum whence he sprang was so constituted that it impelled that germ-cell to proliferate into a being having a man's head."

That the main mass of inborn or congenital characters are ancient heritages of the race is evident. Thus head, heart, limbs, lungs, liver, the various organs of sense, etc., were possessed by the race of man even before it became human. But since every individual differs congenitally somewhat from his parents, therefore every individual exhibits some new inborn characters. These are usually slight alterations of pre-existing inborn characters—a larger nose, a smaller mouth, a stronger heart, a duller hearing, and so forth. Occasionally, however, new inborn characters are of considerable magnitude; or they may not be mere alterations of old characters but entirely new structures. Such new inborn characters are termed abnormalities. Thus a child may be born with a sixth digit on one hand, or deaf, or with a defective heart. All new inborn characters, great or small, all new characters which take origin in the germ-plasm, which come to the individual "by nature," are technically termed "variations." An acquired character, on the other hand, does not take origin in the germ-plasm; it is a modification of an inborn character due to the play of forces from the environment upon that character, after (as a rule) it has developed from the germ-cell. "Thus a man's hand is inborn. But if it be modified by use, disuse, accident or the play of other forces from the environment the modification is an acquired character." All acquired characters, whether new or old, are technically termed "modifications," or "acquirements."

Inborn characters, then, are blastogenetic in origin. They express the hereditary tendencies of the individual, and, with variations, those of the race. Acquired characters, on the other hand, are somatogenetic in origin. They express the modifications of the hereditary characters of the race which are caused in the individual by the play of forces from the environment.

From the nature of their origin it is clear that all inborn characters are transmissible. Also, a moment's thought will

show that each and every inborn character must have arisen as a "variation." What, then, is the cause of variations? Into a complete discussion of this question the object of this paper does not justify us in going; it is sufficient for our purpose to state that in 1801 Lamarck enunciated a theory of evolution, the sum and substance of which was that all variations had their origin in the transmission of "acquirements." His few remaining scientific followers no longer hold that view. They accept the teachings of "natural selection," but supplement them with the belief that acquirements which are the effects of use or disuse are transmitted, not as a whole, but "faintly" and "fitfully."

On the other hand, the followers of Darwin, the Neo-Darwinians, who include the great majority of biologists, assert that *no* acquirement is transmissible, therefore variations must have some other origin. Further information on the subject must be looked for elsewhere. It may be said, however, that the evidence against the transmission of acquirements is so great and so convincing that we are perfectly safe in accepting the dictum of the Neo-Darwinians.

The most important point of difference between inborn traits and acquired characters, then, is that the latter are not transmissible. To distinguish between the two practically, therefore, becomes a matter of some moment.

The whole range of physical acquirements is beautifully summed up by Dr. Archdall Reid as follows:

"If a 'normal' man takes a more than normal amount of exercise, he gets a more than ordinary development of various structures, as happens in the case of the blacksmith's arm. This additional development is regarded as 'abnormal' and is rightly termed 'acquired.' But, as we see, the 'normal' degree of development is attained only as a response to stimulation (exercise) similar in kind though less in amount. Therefore it is clear that the full development of the normal arm, as well as many other important structures, is acquired, differing in this from hair, nose, eyes, ears, teeth, nails, sexual organs, etc., which are wholly inborn, and apparently do not owe their development in the least to use or exercise. In fact, on consideration, I think it will be found that adult man differs physically from the infant almost wholly in characters which are acquired through use, not in those which are inborn. In the features of his face, in primary and secondary sexual organs, and in some other respects, he differs from the infant largely in inborn characters; but as regards nearly all the structures of the trunk and limbs, as well as most of those of the head, the difference lies in characters which have been acquired by the adult in response to the stimulation of exercise and use. Thus the limbs develop almost wholly in response to use; the heart and blood-vessels

develop in proportion to the strain put upon them; as also do the lungs and their accessory muscles, as well as the bony attachments of the latter. The muscles, arteries, nerves, bones, ligaments and other structures of the head and neck develop in response to similar stimulation. Moreover, the normal standard of development is maintained only as a response to this stimulation (*i.e.*, use, exercise); for example, when not used, the muscles and their co-ordinated structures atrophy and tend to disappear, as in the case of a paralyzed limb. It may be added that it is probable that even the infantile standard of development is to some extent acquired under the stimulus of fetal movements in utero. Adult man consists, therefore, of a huge superstructure of use-acquirements, built on a comparatively slender foundation of inborn traits."

"But modifications acquired as a result of use and disuse are clearly never transmitted. Thus, an infant's limb never attains to the adult size except in response to stimulation similar to that which developed the parent's limb. The same is true of all the other structures which in the parent underwent development as a result of use. These, like the limbs, do not develop in the infant, as a result of similar causes. Yet all such characters must have been acquired by every individual of the race during hundreds of thousands of generations. Plainly, then, that which is transmitted to the infant is not the modification, but only the power of acquiring the modification under similar circumstances—a power which has undergone such an evolution in high animal organisms that in man, for instance, nearly all the developmental changes which occur between infancy and manhood are attributable to it."

"Moreover, it is to be noted that this power of developing, of growing in response to the stimulation of use and exercise, is not equally distributed to all parts of the body. By labor almost any man may, if he chooses, increase the size of his muscles or the thickness and density of his skin (*e.g.*, on his hands), but, though no parts are more used than the joints, the teeth, and the tongue, no man can by exercise increase their size. The power of growth in response to exercise resides, therefore, not especially in the parts which are most used, but in the parts in which it is most useful—in other words, in those parts where it has been evolved, not by use, but by Natural Selection."

Taking for granted a proper understanding of the preceding paragraphs, a delineation of the relation which heredity bears to malocclusion should offer no special difficulty.

The human teeth are wholly an inborn character. As teeth they are apparently uninfluenced by the environment. Their form is due to the superimposition of variation after variation

upon the primitive cone, and is the result of the efforts of Natural Selection to closely adapt the race to its environment. The form has been stable for thousands of years. It was reached long before evolution had brought to their highly specialized state the teeth of the Herbivora and Carnivora. All the while certain forces were in operation from the environment, with a result that it was possible for the teeth to erupt into arches so accurate in their dimensions and their relations to each other that all the teeth were brought into active use and fulfilled most efficiently their functions as organs of mastication. The positional arrangement, the interdigitation of cusps, the mutual support against movement of any kind, are familiar to you and are denoted by the term "normal occlusion."

Furthermore, in the words of Dr. Bogue, "In all cases where this degree of mechanical perfection is found, we find also an ample development of the upper maxillary and palate bones; a larger nasal meatus, a much straighter nasal septum than is found under other conditions; less curving of the turbinated bones, and the adjoining facial and nasal bones, including the vomer, ethmoid and sphenoid, are better developed; the cavities in them are more pronounced, the features are more regular, nobler and more pleasing; the voice is more resonant and the whole creature is a better one, less liable to succumb to the attacks of disease, and better fitted to survive if it be attacked."

It would seem, then, that to attain that nicety of balance which finds expression in normal occlusion, the development of the arches must proceed *pari passu* with the development of the teeth. Now the jaws are ancient heritages of the race. Upon them, however, certain forces from the environment are continually reacting—the pressure and tension of the muscles of mastication and of those of the cheeks, lips and tongue; the difference in atmospheric pressure from within and without the oral cavity; and perhaps, also, if we may believe Walkhoff, the pressure of the rapidly growing dental papilla itself. Through a harmonious and sufficient interaction of these forces as a result of use the normal degree of development of the arches is attained. Hence we must conclude, since "normal occlusion" is wholly dependent for its very existence upon an acquirement (the development aforesaid), it cannot but be one itself. That the acquirement is a rare one is not to be wondered at. Conditions are such that the combined play of the necessary forces from the environment is seldom what it should be. Lack of use, extraction, loss of contour of the teeth due to decay, adenoids, enlarged tonsils, congenital absence of teeth, and other causes which will readily occur to you, militate against normal developments, and modifications (*i.e.*, irregularities) follow as

a matter of course. But modifications are not transmissible, hence malocclusion can be in no wise due to heredity.

The conclusion arrived at may be all wrong, but even so the object the writer had in view has been attained—a logical and scientific treatment of the subject has been placed before you. No amount of adverse criticism can diminish one iota the pleasure he has derived from writing the paper, and with this assurance he places it in your hands.

DISCUSSION.

DR. J. B. MORISON.—The more I hear of this paper the more I am impressed with the truth of the remark made in a letter to me from the essayist to the effect that, as this was a purely scientific subject, there could really be very little discussion brought out on it. The subject has been handled more clearly, and thoroughly than by any writer known to me, and I regret that the last three days in which I have had the paper has not been sufficient for me to study more fully the theories set forth. The principal argument advanced by the essayist in coming to the conclusion that mal-occlusion of the teeth can in no wise be due to heredity, seems to be that variations are not the origin of acquirements. Being convinced that he has given the subject careful study, I am reluctant to take an opposite view, but from observation, and my knowledge of the origin of species, I would be inclined to accept with the minority the teachings of natural selection, supplemented with the belief that acquirements which are the result of use or disuse are transmitted in most cases faintly and fitfully, but sometimes very pronouncedly. In defence of this theory I refer you to the many cases that must have come under your observation, of the identical irregularities appearing in the offspring that was present in the parent. These may range from the slight misplacement of one tooth to a change in the form of the whole arch. I have in mind a few of the more striking cases, one in which one parent has a contracted superior arch in the region of the bicuspid, and three daughters and one son, ranging in age from seventeen to twenty-eight, exhibit almost exactly the same condition, the remaining child having a comparatively normal arch. Another case is one in which a peculiar separation and tipping of the incisors is found present in the child, and is identical with the condition found in the parent. Just one other which I think is rather a unique one. In the mouths of both father and mother, by strange coincidence, both superior lateral incisors were absent. Of the five children four have been in my hands for treatment, and in each the lack has been perpetuated. I would also refer you to Dr. Jackson's work on this subject, in which he gives photographs

of models in which he shows the persistence of like irregularities in three generations. In a great many of these cases I have no doubt the peculiar type or irregularity dates back but two or three generations, and that with the restoration of the teeth and contiguous parts to their full functional use, the condition would be relieved and eventually cured, but not in the individual without the aid of mechanical means. Must we not, then, come to the conclusion that there is a strong tendency to the transmitting of acquired conditions, with a relative bearing between the ease or difficulty of connection, and the number of generations back in which the irregularity was purely an acquired form in the individual. The contention of the writer that conditions in the mouth are such that the combined play of the necessary forces in the development and eruption of the teeth is seldom what it should be, is alas, too true, and I quite agree that to these cases by far the greater majority of irregularities are entirely due. With this in mind would it not be a timely opportunity for us to organize in combating these conditions, which consist principally in lack of use and a lack of care. This, however, has little to do with the conclusion reached in the paper, and as my remarks are based on observation, and as more years in practice would bring to one a better opportunity of noting the part played by heredity in perpetuating irregularities, I will leave the field to those who for that reason are better able than I to discuss it.

DR. C. F. MORISON.—I think we would all like to hear Dr. Guilford on this subject.

DR. GUILFORD.—I was hoping for this subject before the paper was read, but I had not made up my mind to discuss it at all. I have thought over it so frequently for so many years, and I have been revolving it in my mind and noticing examples presented in the course of my work, that my opinion is very decidedly made up upon this subject. Furthermore, I do not see how anyone of experience and large practice and observation can have failed to notice the many instances in which peculiar characteristics were transmitted from parent to child. One does not have to be a dentist to say that you can see it in ordinary every-day life. You do not have to look into a child's face always to notice the resemblance to the parent; you can tell that child by looking at its back, or by noticing the way in which it walks, or in any such little peculiarities, so that often in the minor things you notice the resemblance between the child and the parent. We have other peculiarities, we have instances in which the child partakes of the peculiarities of the two parents. They may not be very frequent, but they do occur. I have had one in my own practice, a lady who had one blue eye and one very dark brown eye that were inherited from her parents, so

we have an example. If this is the case in regard to the eyes, why could we not have exactly the same thing in regard to the teeth? You know how the different varieties of roses have been enlarged and developed by taking a rose which appears to have a certain peculiarity and fertilizing another rose, and so have developed a new variety. This may be different in size, etc., from the original stock, but it becomes fixed as a real variety. In California, after developing the seedless apple, they have developed the seedless plum, so that it can be done. Now take, for instance, in the animal world. You probably know that the little animal known as the white mouse is a freak of nature, and yet they have been established as a new variety. The same thing could be done for man provided we would control the marriage of individuals, but we cannot do that. In regard to the peculiarities which exist in the teeth. You sometimes see a very peculiar condition of the mouth, and you see that same condition in the child. Have we not all seen where the mother will have a pointed mouth, and where one of the children have the same condition, and very likely that child's child will have the same condition. Things of that kind are passed from parent to child. Some fifteen or eighteen years ago there was brought to my knowledge a man who had lived to be about forty-eight years of age. That man had no pores to his skin; he was devoid of the sense of taste and smell; he had no hair on his body, just a little above the top of his head. That man was incapable of perspiration, and he was a living man. Now, I traced that man's history, and found that he had inherited that condition, not from his immediate ancestors, but from one side further back. I desired to see his two girls, perhaps fourteen and ten years of age; the mother was normal, but they had inherited part of the father's peculiarity, and that part was this, that in the upper arch there were perhaps four permanent teeth, and in the lower arch perhaps the same number. They did not lack teeth, but they lacked all but a few. The boys, I understand, had normal jaws, but there was a case of direct inheritance from the parent, not so pronounced, but in the same line. We are constantly seeing these things in regard to the teeth. We can bring these abnormal conditions to a normal condition by our mechanical skill. If these things were not changed, it is nothing more than reasonable to presume that the condition will be transmitted from child to child, so that we notice these things as we go along. I have in my practice a little girl of about eleven, who is very large for her age, and her teeth are just identical with those of her mother, but a smaller tooth. The occlusion, however, is wrong. It is abnormal on account of the spaces. What has that been the result of? The father, whom I know very well, is a man of large frame,

and reasonably large teeth; the mother, also, was a woman of good-sized teeth, but her teeth were too small, apparently, for her jaws, and this child has developed exactly the same thing. This is to my mind a perfect instance in which we have a large jaw and the teeth entirely too small for it. I cannot bring myself to feel at all that these things are impossible, or even peculiar, on account of the instances we are constantly meeting with. The only thing about it is that we, by the skill which we possess to-day, can alter the conditions, whatever they may be, but it does not follow that, because the proper number of teeth are there, and that because they occlude in the proper manner, it is a normal case, because in some instances we may have spaces between and still have perfect occlusion.

DR. DUBEAU.—Will Dr. Magee make a few remarks?

DR. MAGEE.—One point that the essayist touched upon was the point of habit. Now I think that everybody will agree that habit has something to do with heredity. Take the large manufacturing districts of England, where you find generation after generation of operatives in the different industrial lines of work, you will find that the children are especially skilled where the parents have followed it through three or four generations. Nothing could prove it more than that. I quite agree with what Dr. Guilford says, and do not think a dentist could hold any other views. Do not see where Dr. Ritchie gets his arguments, because people certainly do inherit the characteristics of their parents. I have nothing more to say, as it is a subject into which I have not gone very deeply.

DR. DUBEAU.—We would be glad if Dr. Bazin would say something.

DR. BAZIN.—I must confess that my hearing is not as good as it was some years ago. I could not hear the paper very well, but I was very much pleased to hear Dr. Guilford, because I could hear him very well. There is a great deal in knowing how to speak to an audience, and I have found that very few people know how to speak and make themselves understood. Now, in the matter of this heredity, as the last speaker says, I do not see how any dentist who has had experience and observation—some dentists have experience and not observation, but when you combine the two, you learn a great deal, and I have learned to believe that there is such a thing as transmission from parent to child of defective features, peculiarities, and in the teeth as well. I had a very singular case which I hoped to observe through a period of years, but the little child died last year, a very remarkable case. The parents were as fine specimens of physical perfection as were ever made, and on the father's side I knew back for two generations, and all very clean-living people. This little child, after a few weeks of life,

was troubled with an eruptive disease of some sort, which puzzled the medical men (I may say the uncle of this child is a distinguished physician here in this city), and this disease ran for a period of some months, and the child became deformed. One side of the lower maxillary did not grow, did not develop. There were abscesses formed in the region of the neck. Of course I did not see the child until it was five or six years of age, and it had an eruption of a few teeth here and there, and the permanent teeth began to appear, and the lower ones seemed to be five incisors, and the bicuspid and the sixth year molar, and on the upper jaw, some few teeth. I took models of that mouth, and took them down to a convention in Boston and puzzled the people down there; and, as I say, unfortunately the child has died, and I cannot tell what the result of maturer life would have been; but it is one of the peculiar freaks which you come to see, that there is such a thing as an abnormal condition resulting from normal factors. I do not know why this child should have this peculiar eruptive disease, whatever it was called, and why there should have been such an irregular development, but, as I say, I could not go far enough back to prove or disprove your paper. But many instances have come before my observation, establishing in my mind the same conclusion that Dr. Guilford has.

DR. DUBEAU.—Would anyone else like to make any remarks?

A MEMBER.—I did not intend to say anything on this paper at all. My experience has been so limited that I cannot go back as Dr. Guilford can to the parent or grandparent; but I think all of us who have practiced dentistry in any form whatever have seen that there are certain characteristics undoubtedly transmitted from parent to child. When Dr. Morison was stating the peculiar case that had come under his observation, it called a case to my mind of two children in the same family, in which the characteristics of the teeth were so marked that one could almost say from the models themselves that they were related. I think there are other cases where we undoubtedly see the lines of relationship in the development of the later teeth, and from seeing that in both parent and child, I think we can come to the conclusion that there is something in what we call heredity. Undoubtedly there are freaks of nature, and I should think that the case which Dr. Guilford cited in the case of the eyes would almost come under that classification, but from my personal observation I should think that we are quite justified in saying that there are certain characteristics which are undoubtedly transmittable.

DR. DUBEAU.—Perhaps Dr. Fossume would express his views?

DR. FOSSUME.—I do not practice orthodontia, and know nothing about it.

DR. STEVENSON.—I think, Mr. Chairman and gentlemen, that we do not practice orthodontia as much as we ought to, but we have still all been more or less interested in the question of heredity. The gentleman beside me has suggested that the insurance companies usually believe in heredity. I think there is no doubt that the majority of the meeting here will agree that what has been called "characteristics" are transmitted. We are obliged to disagree with the essayist in his statement. I can really add nothing to what has been said, because I have had no opportunity of studying heredity from anything like a scientific point of view, and therefore feel diffident about criticizing the paper.

DR. HANNA.—I think it is only possible to determine from observation whether these peculiar abnormalities or irregularities of dental arrangement and formation are hereditary or accidental, and I do not propose to speak along scientific lines. I only propose to call attention to the fact in connection with this in my own family. My maternal grandmother had an irregularity of the lower incisors, in that form (illustrating), one standing outside the other. It is present in my own mouth. My mother had the same condition in a very pronounced form. The same tooth, my eldest brother had to have removed when he was a boy because it protruded so far. I did not have to have it removed. My younger sister had the same condition, but she did not have it extracted because of its unevenness, but she had it extracted because of the condition produced by caries. This is a very pronounced example of a simple irregularity of the teeth.

DR. DUBEAU.—The election of officers was announced for to-morrow morning. Someone has suggested that we have the election now. Which shall it be, now or to-morrow?

SOMEONE.—Have it now and be done with it.

DR. THOMSON.—I would suggest that it would only take a few minutes of the Association's time to take some definite action in regard to these papers. They are very important subjects, and I think some action should be taken. I have a resolution to offer in regard to Dr. Dubeau's paper and my own, which is as follows:

(Dr. Thomson's motion.)

I do not think much time need be taken up in the discussion of these resolutions. I can only say that the local association can use its own judgment in regard to how much of these suggestions they will undertake, and as to the order in which they will undertake them.

Dr. Lemieux seconded the resolutions, and they were unanimously carried.

DR. SPAULDING.—Before the matter is passed on, I would like to move that Drs. Guilford, Capon and Fossume have their names placed on the roll of this Society as honorary members. Seconded by Dr. Ryan, and unanimously carried.

Moved by Dr. Lemieux, seconded by Dr. Lantier, that as mentioned in the President's address, an invitation should be sent to the British Dental Association to meet with us at our next convention, to enter into negotiations to establish a British Empire Dental Association. Unanimously carried.

Moved by Dr. Berwick and seconded by Dr. Stevenson, that a vote of thanks be extended to the authorities of McGill and Laval Universities, for their courtesy in giving us the use of the buildings.

DR. THOMSON.—If it is in order to make a little resolution in regard to a Constitution and by-laws, I would like to offer it now. I think we are greatly in need of a Constitution and By-laws, and I would move that the new Executive Committee prepare a Constitution and By-laws, which may be adopted by the 1908 meeting of the Canadian Dental Association. Seconded by Dr. Chambers, and carried.

Review

The American Text-Book of Prosthetic Dentistry. In original Contributions by Eminent Authorities. Edited by CHARLES R. TURNER, M.D., D.D.S., Professor of Mechanical Dentistry and Metallurgy, Department of Dentistry, University of Pennsylvania, Philadelphia. Third edition, thoroughly revised and rewritten. Octavo, 900 pages, with 916 engravings. Cloth, \$6.00 net; leather, \$7.00 net.

No specialty in general medicine has a more practical literature than that of dentistry. The *American System of Dentistry*, edited by Litch, marked the departure from the era of handicraft, by gathering the leaders in every branch, disclosing even to them the extent of their material and powers, and giving to the world an exposition of the high development which had been reached by the subject in this country. The *American Text-Books of Dentistry* were the natural outcome of this awakening. Each of them has merited and won popularity and prestige. The new edition of the *Prosthetic Dentistry* is, therefore, a literary event of long awaited importance.

Dr. Charles R. Turner, who succeeds the late Dr. Essig in the professorial chair, likewise succeeds as editor. To represent the advances since the previous edition, he has virtually reconstructed the work, both in text and illustrations. Many chapters have been entirely rewritten, and the remaining ones have been thoroughly revised, so that the text is homogeneous, and up to the latest date. A profusion of apt and telling illustrations has always characterized the book, a feature maintained in this new edition. More than half of them are newly executed from original drawings and photographs. In this single volume, dental students, practitioners and prosthetists have the whole subject presented by the highest authority, in excellent literary style, and with a wealth of graphic illustration. It is a book which challenges a parallel in any other field of medicine.

Dominion Dental Journal

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3 COLLEGE STREET

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*All Communications relating to the Business Department of the Journal must be addressed to
THE NEBBITT PUBLISHING COMPANY, Limited, 44 Adelaide Street West, Toronto, Canada.*

VOL. XIX

TORONTO, MARCH, 1907.

No. 3.

PERMITTED TO PRACTICE DENTISTRY.

By Act of the Legislature, Miss Sadie Holmes, of Tillsonburg, Ontario, is permitted to practise dentistry in the County of Oxford for two years, and at the expiration of that time she must have passed all the subjects of the final examination of the Royal College of Dental Surgeons of Ontario to be permitted to continue in practice.

Miss Holmes asked the Private Bills Committee of the Ontario Legislature to make her a dentist, on the ground that she

had been assisting Dr. Crooker, of Tillsonburg, in his practice for some years. She had not matriculated; she had not indentured; she had not attended college; in fact, she probably had done some mechanical operations, and was able to persuade the Private Bills Committee that that was practising dentistry in all its branches.

Miss Holmes and Mr. Eric Armour presented her bill before the committee. Dr. Abbott and Mr. Rowell, with others, opposed the bill.

The members of the committee who strongly supported the bill were Mr. Clark, of Cobourg; Mr. McGarry, of Renfrew; Mr. McKay, of Owen Sound; Mr. Dunlop, of Pembroke. Many others were in favor, but were content to help all they could without arising to express their views. It seemed at first as if the bill had no opponents, but as the chairman directed their attention to the seriousness of the matter, Mr. May and Mr. McDougale, of Ottawa, expressed their disapproval. Hon. Mr. Matheson opposed the bill, as well as Mr. Craig, who made a strong appeal to the members of other professions present to oppose the bill. It was of no avail; they had all promised the girl something. Mr. McKay suggested that she should pass the final examination, which the committee agreed to.

Mr. Studholme, of Hamilton, the only labor representative in the House, though not a member of the committee, asked the privilege of speaking against the bill.

Another strange thing was the action of Dr. W. A. Burns, of St. Thomas, who said that Miss Holmes was better qualified to practise dentistry than 98 per cent. of the students who are graduated. He also said the practise of dentistry was nearly all mechanical work, and that Miss Holmes was a good dentist. Surely Dr. Burns ought to explain to the members of the Ontario Dental Society what interest he has in seeing unqualified persons get a license to practise dentistry in Ontario. Dr. Burns was present to support the bill.

Miss Holmes is not required to attend college, but simply pass the final examination, which she can never do. It seems to me she would be foolish to try without attending college.

It is a mighty strange thing that the physicians and the lawyers in the Legislature are the strongest advocates of short cuts into other professions. They are jealous of their own privileges, and feel that the acknowledgment of regulations governing other professions is in a manner lowering to them. The truth is they feel so secure in their privileges that they may throw it into others. They do not realize that every time the principle is violated their position is weakened. A few more lawyers by Act of Parliament and another Crichton case or two before the Medical Council and the courts and the whole position of the professions will have to be re-adjusted. There are the names of more than a dozen lawyers and physicians on the petitions of the bills now before the Legislature to make veterinary surgeons, druggists and dentists.

No dentist could sit and listen to the discussion of the bill to make Miss Holmes a dentist without being struck with the fact that the public are woefully in need of being educated along dental lines. If any member of the committee knew that it was a dentist's duty to do more than the merest mechanical work he failed to show it by anything he said before the committee. They all, without any exception, believed that the practise of dentistry consists in mechanics only, and that it can be learned in a dental laboratory. So long as the Board continues to acknowledge the preceptor as a teacher of dentistry, the public must believe that it can be learned in a dental office, and that a college education is unnecessary. How can the Board justify our pupilage system and oppose it when not done under their regulations. The public must be educated in dentistry. They must know what a dentist can do and what he ought to do, and what he cannot do. They must know what his responsibilities are to them, and they must know that dentists are educated at college and receive a university degree. The public are asking for this knowledge, and whenever we refuse it we must expect private bills of the nature of Miss Holmes' and Dr. Crease's, and also a refusal of power to manage our own profession. When will somebody tell the public what a dentist is for? The Legislature did not intend to do anything wrong in granting Miss Holmes a

license. They acted up to their light. If they knew the serious consequences of such acts to some unfortunate patient, they would not treat the matter lightly. Dentistry is not fulfilling its duty to the public when it allows such manifest ignorance to exist in the Legislature.

A JUST RETRIBUTION.

Every man gets his deserts if he live long enough. So with the dental profession. They either use or permit the use of unqualified assistants in their offices, and naturally these assistants after having made dental operations for a few years think they are dentists, and ask for private legislation for a license. Dr. Crooker, of Tillsonburg, knowingly used an unqualified assistant for years. Now she can open an office beside him and entice his patients away from him. A just retribution. She is limited to the County of Oxford, also just. The dentists of Barrie used an unqualified assistant for years now they have him with a license, also just.

HUTAX.

After over a year's work the Canadian Oral Prophylactic Association is prepared to supply a tooth paste which has the merit of not containing substances which are injurious to the teeth and is at the same time efficient. It may be obtained from any dental supply house in quantity or from the drug trade.

ONTARIO DENTAL SOCIETY.

The Ontario Dental Society held its Eighteenth Annual Meeting in Toronto, February 25, 26 and 27, 1907. The attendance and interest was fairly up to standard. There seemed to be some desire to change the date of the meeting. In reference to this desire the committee will send out a return post-card for expressions of opinion within a few days.

DOMINION DENTAL COUNCIL OF CANADA.

The next examination for the Certificate of Qualification granted by the Dominion Dental Council of Canada will commence on the first Tuesday in June, 1907.

The examinations will be held simultaneously in all provinces in which there are enough applications to justify such being held.

In order that complete arrangements may be made it is advisable that notice of intention to apply be sent to the Secretary at an early date.

The examinations will be held in classes A, B and D. The first two cover all the subjects pertaining to dentistry and these subjects may be taken by the students as they have passed them in the colleges. For class D the subjects are Prosthetic and Operative Dentistry (both practical and written), Orthodontia, Anesthetics and Materia Medica, Pathology and Therapeutics.

For application blanks and all information, write the Secretary, W. D. COWAN, Box 325, Regina, Sask. President, Dr. H. R. Abbott, London, Ont.

Proceedings of Dental Societies.

SEVENTH DISTRICT DENTAL SOCIETY, NEW YORK.

The thirty-ninth annual meeting of the Seventh District Dental Society will be held in Colonial Hall, Rochester, N.Y., March 26 and 27. We expect to have the largest and best meeting in the history of the society, having secured the assistance of some of the most prominent men in the profession.

KENTUCKY STATE DENTAL ASSOCIATION ANNUAL MEETING.

The next annual meeting of the Kentucky State Dental Association will convene at Louisville, Ky., May 20, 21, and 22, 1907. We anticipate a most interesting and profitable meeting. A cordial invitation is extended to the profession.

WANTED.

Wanted, competent mechanical man. Apply Dr. J. F. Ross, 2 College St., Toronto.

Thoroughly experienced operative assistant wanted for a Montreal office. Good salary offered to capable man. Apply stating age and full particulars to "A.B.C.," c/o The S. S. W. D. M. Co., 14 Phillips Sq., Montreal, Que., or Toronto.

Dominion Dental Journal

VOL. XIX.

TORONTO, APRIL, 1907.

No. 4.

Original Communications

WHAT REMEDIES HAVE WE TO PROPOSE FOR THE OBJECTIONAL METHODS OF PRACTICE OF THE PRESENT DAY.

BY RICHARD G. McLAUGHLIN, TORONTO.

We have just listened to a very able discussion relative to the standing of the Dental Profession in Toronto and the Province of Ontario in the present day. The question that naturally follows such a pronouncement is: Are there any remedies for this condition? If so, what are they, and how can we best apply them?

Every properly conducted organization or enterprise at the period of its inception lays down certain laws and regulations, so controlling and limiting the actions of its members that the enterprise may be brought to a successful issue. The school-master at his desk, by well-known rules of discipline so controls the members of his class that the work of the day is smoothly and successfully carried out. The Government of the Province at the time of organization placed upon the statute books such laws and commands as were thought necessary for the proper carrying out of the affairs of the Province and for the good and well-being of its citizens. And from time to time, as these laws have been found to be inadequate, they have been added to or restricted, as the case seemed to demand.

The profession of dentistry in Ontario is a corporate body.

and, as such, has been from the time of organization controlled and regulated by such laws and restrictions as were considered necessary for the efficiency and proper conduct of its members and for the good of the public.

In the "Act of Incorporation" granted by the Legislature, certain powers and privileges were granted to the "Board of Directors": 1st. For the establishing and carrying on of a school of dentistry and for the licensing of such students as have passed the prescribed examinations and come up to the standards laid down from time to time. 2nd. The Board, also, was given power to "make such rules, regulations and by-laws as may be necessary for the proper guidance, government and discipline of the said Board and the profession of dentistry." These laws have been on our statute books, and the powers have been in the hands of the Board for many years past, and with what result? Can we state to-day that the work of this body and this Board has been practically a success? I answer unhesitatingly, It has. There is much, and very much, of the past work of the Royal College of Dental Surgeons of Ontario of which we ought to be, and are, justly proud. And you will, I am sure, agree with me when I say that no little of that success is due to the able and untiring efforts of the man who to-night presides over this organization—Dr. J. B. Willmott. But from the paper to which we have just listened, and from what comes under our notice day after day, we are convinced of the very unpleasant fact that there is at least one dark blot on the fair name of our profession—the charlatan and the commercial spirit are running riot in our midst.

The all-important question now is, Can this condition be remedied, at least in part? I believe it can. I am honestly of the opinion that if the Board of Directors and the members of the profession take this matter up wisely and conscientiously that at least a decided improvement can be made on the present condition of affairs.

First, in the case of illegal practitioners, the Board has used its powers wisely and well, and with such success that these cases have been kept well under control.

But what about the men who are year after year being graduated from the school, and who, because of incompetency or want of appreciation of the true professional spirit, go sooner or later to swell the ranks of those who are already defaming the fair name of one of the learned professions? I ask, Has the Board and the profession, in the past, done all in their power to lessen the number of these unwholesome and unwelcome graduates? I have no hesitation in making this statement, that if the history of many of these men, who to-day are manning the "painless" and "50c. filling" parlors of this city were traced back to their student days, we would find that in most

cases they were known to the lecturers and demonstrators as laggard students and incompetent workmen, and whose papers the examiners, perhaps, had to read a second or a third time to gain them sufficient marks to bring them up to the required standard for graduation. Now, if many of these so-called graduates go to feed the ranks of those who are such an injury to our profession, I ask you as members of the Board and staff of the college, Is it not in your power to lessen very materially this evil in our midst?

I believe that the subject of ethics should not only be taught from the chair on that subject, but that as much care should be taken to give a practical training on that subject in the infirmary as is given to such subjects as operative or prosthetic dentistry. I hold that in the infirmary the conduct of each student, his bearing towards his patients and towards his fellow-students should all be so noted and marked to his credit or discredit as to play an important part on the final standing of that student. My point is this: that the future standing of our profession depends not only upon the educational standard, but quite as much upon the ethical standard we fix to which each student must reach before he is graduated from the college.

But there still remains the important question, How are we to deal with those who are already graduates and who have travelled so far on the downward course as to bring their offices on a level with the modern departmental or bargain-day store? The powers given the Board to deal with such cases are, perhaps, somewhat vague and uncertain. The "Act" from the beginning gave the Board power to "make such rules and regulations and by-laws as may be necessary for the proper government and discipline of the profession of dentistry." In accordance with and depending on this authority, the Board, some years ago, passed a by-law declaring its power to cancel or suspend the license of any licentiate who was found guilty of unprofessional conduct. But so far the Board has, wisely or unwisely, refrained from making use of the authority thus claimed in dealing with such cases as we are considering to-night. The weakness of the whole matter lies in the interpretation of the somewhat vague phrase, "unprofessional conduct." So we are forced to conclude that in order to deal adequately with the situation the wording of the act must be made more definite, and the powers of the Board clearly and concisely defined.

But the authority we, as a profession, feel we ought to have given us for the bettering of the profession and the good of the public, and what we are likely to get from the Legislature of the present day are likely to be some distance apart. We may rest assured of one thing, that if we are to gain any new power from the Legislature, it must be clearly shown to that body

that it is for the general good and better protection of the public. We can get no new legislation simply prohibiting profuse advertising, nor can we get new legislation forbidding two, three or four licentiates joining hands and equipping one of those dental parlors and advertising cut rates. Such places, it will be claimed, are not detrimental to the public weal.

But there are at least two additions to our Dental Act we might gain which would be a considerable step in advance, viz., 1st. Power given to the Board to suspend or cancel the license of any licentiate who has been convicted, in any court, of dishonesty in the conduct of his practice either by advertising fixed prices or fees for certain kinds of work, or operations which he does not faithfully and practically carry out, and thereby defrauding the public; *i.e.*, advertising the best rubber denture with best make of teeth for \$4.00, but when patient presents for treatment states that a set might be made for that amount, but if something good and satisfactory were wanted a higher fee would have to be paid. Or advertising purely painless operations, which promise is very seldom carried into effect, etc., etc. 2nd. Power given to the Board to compel every owner or partner or promoter of a dental office or parlor to be a properly licensed practitioner, thus prohibiting laymen of any calling from opening a dental office and hiring licentiates at fifteen or twenty dollars a week as operators, thus dishonoring the profession and preying on the public by his commercialism and avarice.

These two points gained—and I think they can be gained—we would be in the advanced position of first, putting a serious check on the reckless and dishonest advertising in our midst, and, second, we would succeed in preventing the drummer or the broker despoiling our name and reaping the benefits rightly belonging only to the licentiate.

THE DENTAL EDUCATION OF THE PUBLIC AND SCHOOL CHILDREN.

BY G. K. THOMSON, D.D.S., HALIFAX, N. S.

Read at a public meeting of the Canadian Dental Association, Montreal.

The subject which I present for your consideration this evening, "The Dental Education of the Public and School Children," embraces the one mentioned in the programme, which has been so intelligently and clearly treated by Dr. Dubeau.

We, members of the Dental profession, called upon as we are to treat cases of deformity of the face and mouth, and irregularities and diseases of the jaws and teeth, caused by neglect of children's teeth, such neglect being due to ignorance on the part of parents or guardians, perhaps realize the importance of this subject more than members of other professions and the general public.

Medical men, also, know that many bodily ailments are caused by malnutrition due to insufficient mastication of food, and the infection by countless microbes contained in neglected mouths, sometimes reeking in pus and decay. Indeed, so dependent is the good health of the whole body on the hygienic condition of the mouth and teeth, that we have no hesitation in saying that the proper education of the public in Canada with regard to the care and preservation of the teeth will, in the next and succeeding generations, result in the production of a much improved race, both mentally and physically.

Its importance is recognized the world over by Dental Societies, Government and School authorities.

In Germany, France, Switzerland, Belgium, England and other European countries much has been done towards the promotion of dental hygiene in public and private schools.

There are now in Germany two elegantly established school clinics. That in Strassburg was opened in October, 1902. In December, 1902, one in Darmstadt was established with public ceremonies participated in by city and state officials and leading dentists and physicians.

In connection with these clinics the following extract from a recent editorial in the *Dental Brief* is interesting:

"In Darmstadt, the rooms, six in number, consist of two operating rooms, a waiting room, a toilet room, a consultation room for the officers of the clinic and a combined library and laboratory. As shown by the photographs these rooms are all surprisingly neat and attractive in appearance with curtained

windows, decorated walls, rugs for the floors, etc., while the equipment of dental apparatus and the other appointments, such as dental chairs, engines, glass tables and cabinets, are all of the most modern type. In general details nothing better is needed for any private dental office. The Strassburg clinic appears to be less elaborately housed, the rooms and their appointments being more upon the usual school-house lines, but the equipment has all the essentials for satisfactory dental work.

When first opened, clinical service was given by local practitioners without remuneration, but with the progress of time the work grew to such proportions that the employment of paid assistants was found necessary.

Concerning the results of the clinic in Strassburg, Consul Joseph I. Brittain has furnished the following report to the State Department at Washington:

"At the Strassburg clinic 5,343 children were examined the first year, and 2,666 received treatment, during the second year 6,900 were examined, and 4,967 were treated. The third annual report, just published, states there were 12,691 visits to the clinic in 1904, and 6,828 children were treated, for whom 7,065 teeth were filled, and 7,985 were extracted, and 4,372 other children had their teeth examined.

"Great advancement was made during the past year in the attention given children between the ages of three and six years. Of the children of these ages examined only 362 out of 2,269 had sound teeth, or less than 16 per cent. Of the children examined between the ages of six and eight years, 160 out of a total of 2,103 had sound teeth, or but 7 1-5 per cent. The school teacher enters the name of each pupil on a card, which is taken to the clinic, where the dentist enters a detailed record of the condition of the teeth after making the examination, returning the card to the pupil and retaining a duplicate of the same.

"There were forty-four examination days, at which eighty children were examined per hour. The children were taught to clean their teeth three times daily, and especially before retiring. The dentist also instructs the children in the use of the toothbrush, each child receiving a brush for home use. The dentist also gives each child a piece of rye bread, and instructs him how to masticate the same with the least injury to the teeth.

"At a recent meeting of the Strassburg Teachers' Fraternity, where four hundred teachers were present, a lecture was given upon the observation and care which teachers should take in reference to the teeth of their pupils. At the meeting a practical demonstration was given by a class of boys between the ages of ten and twelve years, who showed remarkable knowledge concerning the construction, diseases and care of the teeth. Since the introduction of the treatment there is a marked improvement

in the general health of the public school children, and there is less headache, earache and stomach trouble."

In England there is a society of dentists—the "Schools Dentists' Society"—the object of which is to induce the Government and municipal bodies throughout the United Kingdom to appoint salaried dentists to County Council schools.

Under the auspices of this society, booklets on the care of the teeth, so written that children may understand them, are published. The Royal Dental Hospital, of London, also publishes booklets for distribution.

Some of these booklets have been distributed among you this evening, and I can assure you from personal experience that their distribution in private practice is very effective.

In the United States, New Jersey and other States are following the lead of European countries. A committee of the Southern Dental Society, of New Jersey, have made application to the various county superintendents of the public schools for permission to appear before the county institutes and deliver lectures and distribute literature upon the subject of the care of the teeth of children. I believe the New Jersey State Dental Society has a committee at work to secure periodical examination of school children's teeth.

Dr. Darlington, Commissioner of Health, City of New York, writes me that there is no law in the State of New York requiring the regular examination of teeth of school children, but that during 1906, up to July 20th, 18,478 children had been examined by the Board of Health in New York City, and of those children 9,605 were found to have defective teeth, this information being communicated to the parents for the purpose of having the defects remedied.

The Pennsylvania State Dental Society is urging the introduction in public schools of periodical lectures by competent dental practitioners.

Realizing then, as we do, the importance of this subject, let us consider the situation in Canada. With a view to obtaining information upon this point, the following questions were sent to representative dentists in each province:

1. Have you a law in your province requiring the periodical examination of the teeth of school children?
2. To what extent is the care and preservation of the teeth referred to in your school books?
3. What action is being taken to bring this matter to the attention of the Government and school authorities?

The replies were as follows:

Quebec—1. No law at present, but working towards that

end. 2. Nothing in French or English school books. 3. Government has been requested to appoint dentists on Board of Health, but has not done so.

Ontario.—1. No law. 2. About four pages of the poorest kind of trash ever printed on the subject, in the prescribed text-book on Hygiene. A committee has been appointed to have proper instruction inserted in revised text-books. 3. Steps are being taken to bring the subject before the public, the schools and the Government. The Department of Agriculture has promised to send out a bulletin on "Oral Hygiene" to all the members of the "Women's Institute" and "Women's Council" in Ontario, the Committee to supply the copy, and the Government to print and send it out.

A bill providing for the periodical examination of the teeth of school children has been introduced into the Legislature, but has never passed the committee stage.

Manitoba.—1. No law. 2. Care and preservation of the teeth is only referred to in a general way as part of the subject of Hygiene. 3. No action.

British Columbia.—1. No law. 2. Subject only touched on lightly in some of the higher classes in the schools. 3. No action at present. An unsuccessful move was made by a former trustee.

Saskatchewan.—1. No law. 2. Nothing in school books. 3. In the Indian industrial schools the children go to a dentist in the regular way, the accounts being paid by the Interior Department, Federal Government, but no provision is made for white children.

Alberta.—1. No law. 2. Nothing in school books. 3. No action yet, but likely next season.

New Brunswick and Prince Edward Island.—1. No law. 2. Nothing in school books. 3. No action.

Nova Scotia.—1. No law. 2. Very little contained in school books. 3. The Dental Association has appointed a committee on the Dental Education of the Public and School Children, with instructions to secure, if possible:

An act requiring the appointment of dentists for the periodical examination of teeth of children in the public schools.

The revision of school books with regard to the "Care and Preservation of the Teeth."

The examination of applicants for teachers' licenses with regard to their knowledge of the teeth and dental hygiene.

Distribution of suitable booklets on the care of the teeth, in the public schools and elsewhere.

Lectures before teachers' associations and school children in public and private schools.

The Superintendent of Education has given this committee great encouragement, and promises his assistance in carrying out their instructions; and should some proposed changes of an educational character occur it will make the revision of school books an easy matter.

We therefore find that in the provinces of Canada there is no law requiring the periodical examination of the teeth of school children, very little desirable instruction with regard to Dental Hygiene, and in only three of the provinces has definite action been taken to bring the matter to the attention of the public, and Government and school authorities. Thus in comparison with European countries we have accomplished very little, and as it is of great importance to us as a nation, it would seem proper that the Canadian Dental Association, being national in character, should take some definite action towards the enlightenment of the public in these matters.

Now, what action will give the best results? We must remember that according to the British North American Act, educational legislation is entirely in the hands of the Provincial Government, and as Federal laws with regard to professional standards would not be practical, so would Federal legislation in a matter of this kind be impractical.

We can, however, strengthen the local associations by resolutions of sympathy and endorsement, and support them by influence, so that when they appear before their respective Governments for legislation they can the better impress them with the necessity for it.

I would respectfully suggest that this Association at a regular meeting adopt resolutions endorsing the action taken by Quebec, Ontario and Nova Scotia in this matter, and that recommendation be sent to the various provincial societies urging the appointment of committees for the purpose of securing:

1. An act requiring the establishment of dental clinics in the schools, the periodical examination of the teeth of school children, and providing for the appointment of dentists for the purpose.
2. Revision of school books with regard to hygiene of the mouth and teeth.
3. Distribution of suitable booklets in the public and private schools and large militia camps.
4. Special instruction on this subject in Normal schools.
5. Special paper on subject of "Dental Hygiene" in examinations of applicants for teachers' certificates.
6. Lectures before teachers' associations and school children in public and private schools.

Our object being the education of the public, so that the teeth of children will receive prophylactic attention from infancy, thus preventing decay, premature extraction, etc., and ensuring them the sound, serviceable and beautiful teeth necessary to perfect health, I think that if the suggestions offered were followed, the desired results would be secured in a few years.

I thank you, Mr. Chairman, Ladies and Gentlemen, for your kind attention to my poor attempt at presenting this matter for your consideration.

CAN WE WITH MODERN CIVILIZATION BECOME INDEPENDENT OF NATURE IN REGARD TO OUR TEETH.

BY F. M. WELLS, QUEBEC.

Read before the Montreal Dental Club.

For the purposes of this paper it will not be necessary to go back to the period in which the want of physiological and pathological knowledge and the imperfections in technique restricted the accomplishments of the dental surgeon, when wounds and fevers were regarded as inseparable, when healing without inflammation was unknown, and wound fever and inflammation appeared as the natural reaction of the injured organism.

Our whole conception and understanding of the hygiene of the mouth has been essentially altered in recent years.

For the great advancement in dental surgery we are indebted to scientific investigators such as Pasteur, Koch and their scholars, who have taught us that putrefaction and fermentation, as well as infection, are dependent upon the minutest forms of plant and animal life, and all that is necessary to their avoidance is the exclusion of these forms of life.

In this paper it is not my intention to deal with the early history of dentistry, but incidentally it might be mentioned that dentistry is a very old profession.

In the famous Laws of the Twelve Tables the art of fixing teeth with gold is mentioned, and several skulls have been found in Etruscan tombs to which artificial teeth are attached by a system of gold binding identical with the bridge work of the modern dentist. A good example of this occurs in the Musico Papo Gilio, and several others are to be found in the museum of Corneto. In one of these two incisor teeth are replaced by a single calf's tooth filled in the middle. These dental works date back to the fifth century B.C. (*Dental Brief*, October, 1906.)

There is no doubt that the increased amount of decay has been brought about by modern civilization, but in what way no one has yet been able to explain satisfactorily.

The milk-tooth period of child-life has long been considered a very important period, the most important time being the first two years of life, when even the most intelligent parents fail to do their duty.

Every dentist knows that if a boy reaches the age of 14 with good sound teeth, he is likely to have good teeth all his life.

The preservation of the teeth depends largely upon the gen-

eral condition of the digestion, good food, regular hours of sleep and proper outdoor exercise. Over indulgence in eating is bad. Children should be wisely taught about the hours of eating, and great care should be taken in regard to the selection and the amount of the food.

Under the title of "The Effect of Modern Civilization: The Cause of Tooth Decay," Dr. Miller says: "Dental decay is a chemico-parasitical process, consisting of two distinctly marked stages, decalcification, or softening of the tissue, and dissolution of the softened residue. In the case of the enamel, however, the second stage is practically wanting, the decalcification of the enamel practically signifying its total destruction." (Miller, "Micro-organisms of the Mouth," page 305.) This statement is now generally accepted.

TRANSMISSION OF DISEASE.

It is astonishing that so many people are still ignorant of the fact that such diseases as syphilis, influenza and tuberculosis are transmitted by the mouth through the practice of using a common drinking cup, or of moistening lead pencils.

The communion cup is one of the best instances of infection with specific bacteria. It goes from mouth to mouth, and the innocent subject is altogether without protection. To say that there is no infection possible from the communion cup would imply a want of intelligence that few scientific workers care to admit. We are frequently met by the stock argument that this statement involves an unprovable proposition. We can sum it up this way. If we are going to keep cooped up in our houses all our lives, thus weakening our immunizing powers, we must take every possible precaution to prevent the spreading of disease.

The dental pulp is a source of unlimited infection of the vital parts of our system, causing congestion of the lungs, tonsilitis, etc. I have been following several cases of tonsilitis in my practice, and from observations made from time to time I can draw no conclusion other than that the unhygienic condition of the mouth has been the predisposing cause.

Typhoid, diphtheria, cholera and other pathogenic types are very seldom found in the mouth. The most important ones are pneumonia, septicemia and micrococci *gingivæ pyogenes*, *staphylococcus pyogenes aurus*, and *staphylococcus pyogenes albus*. Miller found organisms of pyorrhea which he called "micrococci," "*gingivæ pyogenes*," and are virulent in character.

The dentist who makes a close study of conditions in every day practice cannot fail to see that the cleansing of the mouth by the removing of debris of food is an important thing, but it has yet to be found that there is not a still more important factor to be overcome. After the mouth is thoroughly cleansed of the food

the acid fermentation which causes the softening of the dental tissue does not occur, but what are we to say about the tooth that comes through enamel soft as the dentine itself, which is a very common condition that every practitioner is called upon to treat?

An increasing importance is attached to the systematic care of the teeth. This is especially true in the case of the child who during the growth of its body, should be fed with good wholesome food, given proper exercise, and made to sleep at a regular hour. Good food, good sleep, good teeth are synonymous with good health. The teeth suffer with the bones and with the general health of the child. If good permanent teeth are to be expected great care must be taken of the milk teeth.

CARE OF TEMPORARY TEETH.

The temporary teeth serve the purpose of mastication during a most important period of a child's existence, and an early loss of these teeth means a shortening of life. This is a matter not only of private but also of public interest. Often times a child that might have grown up strong and healthy, and so have been able to play his part as a useful member of society, has had his future life handicapped by lack of attention in his early years. Since the state needs strong men, it is the right and the duty of the state to take every precaution consistent with a respect for individual liberty to secure and to preserve the health of the public. The state requires that all plants that are infected and likely to be diseased shall be destroyed to prevent further infection, and that those that might possibly be infected be treated to destroy any trace of infectious material.

It is just as important for the state to look after the care of the mouths of the children that they may grow up strong and healthy men as it is to protect them against the ravages of small-pox. Further, it is just as important for school authorities to investigate the conditions of the mouths and teeth of children as to examine for eye disease, tuberculosis, etc., and to protect them by proper examination and by instruction as to the treatment and care of the mouth, and as to the need of dental attendance by a qualified dentist. There is no doubt that through neglect in childhood a foundation is laid for ill-health in manhood.

In the interests of public health and of the state, I believe that the care of the teeth should be made the subject of instruction in the public schools, and that examination and advice by a competent dental practitioner should be given under provisions similar to those made for general medical attention. Do not forget that it is the duty of the parents, a duty generally neglected, to form in the child even before school age the habits of cleanliness in regard to the teeth.

The healthy condition of the temporary teeth leads to healthy condition of the permanent, and an unhealthy condition of the temporary is sure to lead to an unhealthy condition of the permanent teeth.

Reference is frequently made to the fact that the quantity of soap used by a nation is an indication of its culture and of its public health. In like manner I may say that one can judge of the hygienic knowledge of a family from the attention which is devoted to the care of the teeth and mouth.

Kunert states that until a child is three years of age its mouth should be washed out by the nurse after each meal. This is best done by a piece of absorbent cotton wound around the finger and dipped into a 6-10 per cent. solution of NaCl in lukewarm water, and from three years onward the child should use a tooth-brush like a grown-up person, only a smaller and softer brush should be used.

Miller takes the same view, and states that there is a widespread opinion that no weight is to be laid upon the care of the milk teeth, as they are to be replaced by the permanent teeth. This is, so far as I know, the general view of doctors, but is a mistaken one, and for many reasons must be rejected. The influence of diseased milk teeth upon the health of the child is just as great as the diseased condition of the permanent teeth, in fact more so, because the child in the tender years of development is not so strong and cannot so well resist the bad effects produced. Further, this diseased condition of the milk teeth has an injurious effect upon the groundwork upon which the permanent teeth are to be built, namely, upon the inferior and superior maxillary bones and the alveolar process and surrounding tissues.

Every child should be taken to a qualified dentist at least twice a year. When the teeth of a child are permitted to go without care until it has toothache, then nearly any treatment which the dentist applies causes pain, thus imparting to the child a natural dread of the dental chair, and thus developing in the child a desire to stay away from the dentist, and also not to report to the parents when a tooth is in the first stages of decay and when treatment would cause little or no pain. Whereas had the child been taken to a dentist twice during the year it is probable that he would have detected the defect and by treatment would have remedied it without pain and without arousing in the child a dread of the dental chair.

The question arises, Should milk teeth be filled?

According to Suersen, 1865, Yes. This view is also held by Miller, who states that fillings should begin in the second year in case of decay, while others hold it should be under no condition later than the fifth year.

It is most important that the decayed tooth of a child should

be filled before pain makes its appearance, and while the defect is yet small. If the child is too irritable to have the work done, I have found that I could preserve a tooth for a number of years by painting it with AgNO_3 , 5¼% solution, three or four times a year.

Now as to the material of filling.

For the temporary teeth any ordinary filling will do. Gold is too expensive, and in many cases the tooth is too tender to stand a gold filling. If a tooth cannot be saved by filling, then you must apply the forceps. This law of scientific dentistry holds good not only for permanent teeth, but in a particular sense for the milk teeth.

It is wonderful what care people will take in introducing food or drink into the stomach through the mouth. They are most particular that no decomposed food in a state of putrefaction shall enter, but these same people may not give the slightest attention to the hygiene of the mouth, which is little better in an unhygienic condition than a putrefying mass. With one decayed tooth beside a healthy normal tooth, you have a condition which no housewife would permit in her household affairs.

For example, she picks over her apples and potatoes and removes all those which have the slightest sign of decay, and separates them from the sound fruit and tubers, thus preventing the decayed from infecting the others, but in nine cases out of ten she will permit the decayed tooth to pour out its putrefactive infectious matter not only on the sound and healthy teeth, but on the surrounding tissue which conveys it into the system. As a result she spends many a sleepless night, and suffers much pain and loss of appetite.

Great care should be given to the first molars. As by general hygiene thousands of lives have been prolonged, so by means of suitable mouth hygiene we can save the first molars from extraction.

SCHOOL CHILDREN.

What a vast amount of preventable disease exists among school children!

Expert medical supervision finds that it is in schools where the poorer children are that the most care is required, as they have not the advantage that the better classes have. This state of things, however, affects the community, and the hygiene of the mouth should form a necessary part of the curriculum. I have noticed several cases in my practice where girls and boys have left their homes in Quebec, gone to boarding-schools, and when they return I see a gradual increase in their work from year to year. Now, it is one of two things that causes the increased decay, or perhaps both—not taking care of their mouths, or staying up later at night and studying harder.

DENTISTS IN SCHOOLS.

With the Boards of School Commissioners lies the responsibility of appointing properly qualified dentists to be attached to every public school, and of having children taught the real need of constant dental care.

I understand that all the schools in this city are now under medical supervision.

The modern business man knows that it is to his advantage to have a house dentist to look after the poor working classes. He knows that poor teeth have poorly nourished bodies, and that it is impossible to do good work unless the body is properly nourished.

I hope the time is not far distant when our Board of Education will see the importance of having a dental instructor attached to every public school who will devote at least one hour a week to instructing the students as to the proper hygiene of the mouth.

ACTION OF TOBACCO UPON THE TEETH.

After smoking a Havana cigar, I made cultures of my own saliva, and found that it had the effect of retarding the growth of the bacteria more than any of the mouth washes that I have experimented with. I took the culture just before the cigar, and then repeated every five minutes for one-half hour after smoking.

I am of the opinion that if smokers kept their teeth clean, that is to say, free from foul deposits, and allowed the smoke to percolate around the teeth, they should on an average have much better teeth than non-smokers.

STARCH ON THE TEETH.

According to Miller, starch and amylaceous substances are more detrimental to the teeth than sugar. The latter, being readily soluble, is soon carried away, or so diluted with the saliva as to be rendered harmless, whereas amylaceous matter adheres to the teeth for a greater length of time and consequently manifests a more continued action.

Hesse's 122 observations in respect to caries of bakers' teeth lends support to this opinion. He writes: "In the Dental Institute of this city (Leipzig) I have had the opportunity of seeing a great number of patients among the industrial and working classes, and have been particularly surprised at the bad condition of the teeth of our bakers. They are affected by caries to such a degree that I have been able in many cases, since my acquaintance with this phenomenon, to determine the calling of a patient by the condition of his teeth." There can be little doubt that we have here to do with a disease which stands in causal connection with a person's occupation or calling, and the theory of caries

recently propounded by Miller gives a satisfactory explanation of it.

MOUTH WASHES.

The most popular mouth washes, or the best advertised ones, are more harmful than they are beneficial, and this is a subject that should interest every dental practitioner. Some have expressed the opinion that decay would be banished from the mouth altogether by the proper use of antiseptic mouth washes.

I have made tests of five widely advertised mouth washes, and in no case did I get the results that I expected. One of them gave a strong acid reaction which was detected twenty minutes after it was put into the saliva. I desire to state that in making the tests I used a determined quantity of pure cultures taken from my own saliva. In order to make the tests I took three bacteria, two different bacilli and one coccus of twenty-four hours' incubation grown on agar agar. I put them through in a series of four controls to make sure of proper sterilization.

We must not forget the fact that the mucous membrane is, in itself, protective against all the bacteria that are constantly in the mouth, so long as it is kept in a healthy condition. In making the tests of antiseptics I also used bichloride of mercury 1-2000 and formaline 1%.

I think now that the work that has been done by a number of scientific men has proved beyond a doubt that antiseptic mouth washes have no power of destroying the bacteria in the mouth, and that they do not arrest their propagation to any appreciable extent, but, on the other hand, that they are injurious to the mucous membrane, and in some cases to the tooth itself. They certainly do not arrest decay, and what we should do is to inform our patients of the fact that they are not benefited by the use of them, but are using something that is injurious to the general health. Frankness and fairness will hurt no man, least of all dentists, who are always glad to acclaim anything that will alleviate human suffering.

It must be admitted that these washes all have some power as antiseptics, but they are not disinfectants, and their antiseptic powers are only of a slight temporary effect. Of this the writer has not been without practical experience.

I think what surprised me most of all last summer when I was giving special attention to this subject was the result of the tests I made with prepared chalk. I took the ordinary chalk and got one of the demonstrators accustomed to the ordinary way of cleaning the mouth and made tests every half hour from nine o'clock in the morning until one. After the first half hour, from what I removed from between the molars I got an acid reaction, and continued to get the same thing throughout the morning. Now, if you can, picture to yourselves the amount of caries that

is caused by the forcing between the teeth of the chalk which has been already mixed with a lot of mucous from the surface of the teeth and is packed well between the teeth. You can easily understand that the chalk will soon lose its alkaline properties with the amount of foodstuffs that have been mixed with it, and that the micro-organisms about the teeth soon turn it to acid. As it is prepared in the tooth pastes its properties are readily destroyed, and it gives an acid reaction more easily than it does in its pure state.

No matter how careful one may be when using an insoluble powder to cleanse his teeth, it becomes almost impossible for him to remove it all from between them by means of a brush, tooth-pick or floss silk.

When such a course of events takes place we need hardly be surprised if a few of the teeth fall a prey to the acid developed.

Mr. Thomes says: "It would really almost appear as though bad teeth were inherited with more certainty than good teeth." This is apparently quite a general belief. The fact of the matter is that the teeth are inherently just as excellent in structure as they were generations before.

For the majority of the bacteria which are found in the mouth an alkaline-nourished medium is most favorable for their development.

Powder chalk is the reagent which, as a rule, bacteriologists employ for this purpose, and therefore when this substance is used in tooth pastes and not completely removed from the mouth a condition is at once established which is exceedingly favorable for the multiplication of the micro-organisms, and at the same time of the products of their metabolism. It is true that the chalk will neutralize the acids which are produced, but these latter are of secondary importance when considering the metabolic products of bacteria.

HOW CIVILIZATION AFFECTS THE TEETH.

Mr. Thomes, not knowing specifically how civilization affects the teeth, says there appears to be no doubt that increased civilization predisposes to caries, though as yet it is uncertain in what way it does so.

Dr. Black has a theory that the constitution of the tooth does not account for the prevalence of the disease. He says observations already made render it certain that caries of the teeth has its beginning only when the conditions are such that the micro-organisms causing caries form gelatinous plaques by which they are glued to the teeth.

The effect of these studies and of the propositions which logically follow is to divert the search for those factors which predispose persons to caries of the teeth from the teeth them-

selves, where they were previously looked for, to the surrounding of the teeth, or to the oral fluids and the bodily conditions which give character to the secretions.

Mr. Cantlie says: "The cause for this premature and abnormal decay is, however, scarcely dealt with. True, I have received innumerable suggestions as to the cause, but scarcely two people are agreed on the subject. One blames sweets, another infant foods, a third declares that children partake at too early an age of animal food; some contend that it is a developmental change, and that in time the human teeth will disappear; some ascribe the decay to two such opposite conditions as gout and rickets. In fact, there is scarcely an inherited disease or a variety of human food or drink which has not been suggested to me as a cause."

After condemning the developmental theory, too, he says: "Another phase of the developmental theory is that our jaws are getting smaller, leaving less room for our teeth. The teeth, therefore, it is contended, become overcrowded and overlap, leaving nooks and recesses in which particles of food may find shelter, setting up decomposition, eroding the enamel and leading to caries of the dentine. This is stating an actual condition whilst begging the cause.

DENTAL CARIES AND ITS CAUSATION IN GENERAL.

Wallace says: "Caries is invariably initiated by the acid formed by the action of micro-organisms upon the carbohydrates which lodge after each meal in crevices and spaces between the teeth, and is continued in similar manner, the decalcified part acting as a more perfect receptacle for carbo-hydrates and micro-organisms. The micro-organisms when in the decalcified dentine also give rise to the destruction of its organic bases. The rate of the destruction of the tooth substance varies principally with the supply of carbo-hydrates to the micro-organisms in the carious cavity. If the orifice of the cavity is such that the supply of carbo-hydrates is but small, the carious action is slow, and if, for example, the supply should be practically cut off, as by the extraction of a neighboring tooth whose position previous to extraction was such as secured a regular supply of carbohydrates, the decay will cease altogether. There are other circumstances which exercise an influence on the rapidity of caries, such as the acidity or alkilinity of the saliva, the perfection of the calcification of the teeth, etc., but these are of little importance." (Wallace, page 6.)

In order to find out with what frequency dental caries affects children, I have examined over one thousand cases, and my experience, especially in my own practice, is that there is just as much caries amongst the rich as the poor. In no case have I

found good teeth in the mouths of children who have been allowed to sit up after six o'clock at night, and I find them progressively bad as later hours are permitted.

There is no doubt that the foods we eat play an important part in producing the decay so noticeable in the present generation, but there has not been sufficient change in the ordinary diet to account for the increase in decay. However, the ordinary theory in regard to the effect of foods fails entirely when applied to the non-calcification of the permanent teeth before eruption takes place, and breaks down sadly in other respects when submitted to the rigid processes of reason.

Many other theories have been advanced in regard to the predisposition to decay of the teeth and to the causes of the increase and prevalence of the disease.

The theory of the degeneracy of the teeth is a favorite, and has the negative merit of being hard to disprove. I do not want to condemn this theory, but my own opinion is that if a child is brought up under natural conditions the calcification will be perfect, and as to heredity I do not believe a child can inherit bad teeth any more than he can inherit tuberculosis. Undoubtedly he can inherit a weak constitution, which will not offer proper resistance to the attacks of various diseases, but this has no special application to the teeth.

From the work I am doing I believe the whole trouble originates in a dietetic source, and that it is not brought about by the artificial foods. As much nutriment can be had from the artificial foods as from the natural foods if they are properly prepared.

My views are that if the child is properly nourished, has an abundance of outdoor exercise and is put to bed before artificial light is required he will have proper calcification in the teeth.

Notwithstanding the importance of proper food I have known several cases where children have been watched, and every attention has been given to proper feeding, while no better results have been attained; that is to say, the amount of decay was just as great as the average. The reason generally given for this is that the children were predisposed to caries.

Colyer says: "Civilization is certainly another cause, and this acts in a variety of ways, the principal of which are the cuisine of the present date, which nearly reduces the use of the teeth to a minimum for mastication purposes, and more particularly the activity of the brain, which tends to reduce the standard of the teeth."

Aetiology.—The cause of dental caries may be given as non-calcification of the teeth, a deficiency of lime salts, with too great an amount of organic matter.

I have had not only one case, but I might say a dozen cases, where the patient, 18 or 20 years old, has had his teeth properly attended to and has left with them in a good hard condition, yet in six months or so he would return with more cavities in his mouth than he had previously. Moreover, the greater number of the teeth that were to be filled contained new cavities.

In no case was there a change of diet to bring this new condition, but a different way of living could generally be traced.

One of the worst cases I have had was a governess, who had her teeth filled by a dentist whom we all know, Dr. Hyndman, and he undoubtedly left her mouth in a good condition. He told her that her teeth were hard, and would not be likely to trouble her for some time. In less than nine months I had to fill eight teeth for her, in which all the cavities were new, except two. Besides, I found all the teeth to be very soft. Now, what was the reason of that rapid increase of decay? It certainly was not the fault of the dentist, whom we all know as a conscientious and skilled practitioner.

Arrested decay in the teeth must arise from some vital action that is brought about in some way in the system. I should like to know whether it has ever been known to take place in a tooth that has been devitalized.

The healthy living-room should permit direct sunlight to enter. This is not always the case, especially in cities.

Light is due to wave motion of rays through ether, which pervades the atmosphere. Light has a specially peculiar action upon human beings, and their healthy disposition. It has a great action upon the human being in influencing his psychological condition. A clear, bright day makes him cheerier and more joyous, spurs him to work, and enables him to overcome obstacles with less difficulty. He enjoys the fresh air, and this increases the metabolism of the system, and improves the appetite. The opposite is observed on dark days; the blue gray tone which predominates makes man sad; the desire for work, for fresh air and outdoor exercise diminishes, and there comes a loss of appetite. Particularly pronounced is the action of the sun upon such persons and children. The night, with its insufficient light, is the natural time for rest, and darkness acts as a soporific.

The red and yellow rays of sunlight awaken in man a feeling of warmth and pleasure; darkness a cold feeling. Sunlight has an influence upon the nourishment of man; true, it is not direct by the action of rays upon his eye, but it is indirect through its action upon his nervous system resulting in a desire for fresh air and motion, and in a general exhilaration and in an improved appetite.

Lack of sunlight leads to colorless and bleached complexions,

and with them to psychological disturbances and melancholic symptoms. It also reduces the desire for food, and this acts indirectly upon the human nutrition and development. In artificial light the general injury to the system does not lie, as a rule, in too much light, but rather in too little. With diminished light, in order to see an object the eye has to be strained. If the object is brought into close proximity the eye has to accommodate itself, and this leads to the disturbances of the optic nerves. As is well known, the atmosphere absorbs from sunlight the rays with short wave lengths (blue and violet), for if this were not the case the sun would appear blue to us instead of yellowish.

Artificial light is frequently misused. Work which should be performed by daylight is put off until artificial light is necessary, and then follows the waste of the bright morning sunlight in bed. No artificial lights can replace the sunlight in its beneficial action, and many of them have a pronounced injurious action upon the health. We know that the atmosphere of rooms where lamps, gas, etc., are used is constantly changing owing to combustion and its products. Electric light is an exception, but all artificial lights have an influence upon our nervous system. No artificial light is as regular as the sunlight. The electric light is notably unsteady, and by its jerky fluctuations it produces a very tiring and depressing effect upon the optic nerves. This is especially true in the case of children.

Moreover, the heat from artificial lights has a marked influence; man or child is more or less tired when artificial light is employed. No lamp exists that does not give heat. Besides, for purposes of economy, the light is generally placed near the face so that there heat rays have a hurtful action upon the skin of the outer angle of the eye. The temperature of the skin increases, the eyes become dry, there is a peculiar burning feeling which makes further employment of them unpleasant, and in many instances brings about headache.

We are driven, therefore, to the conclusion that the use of artificial light, with its many accompanying features, has a very pronounced action upon the nervous system, and indirectly through this upon the development and condition of the teeth, especially during childhood.

Many experiments have been made as to the effect of over-study in children after their day's work and while using artificial light. The measurements of the effect upon the nervous system have shown that there is a very rapid increase in the uneasy feeling and general nervousness of the child, and with this condition a corresponding deleterious effect upon the whole system.

This must make itself felt upon the general health of the child, and indirectly upon the teeth and membranes, and must lower their resistance to infection and to the action of deleterious substances. I feel that I am not going too far when I say that the free use of artificial light during early childhood absolutely prevents the perfect building up and perfect calcification not only of temporary, but of permanent teeth, but more particularly of the latter.

DENTAL LAW OF ALBERTA.

(Assented to May 9th, 1906.)

Whereas the profession of dentistry is extensively practiced in the Province of Alberta, and it is expedient for the protection of the public that a certain standard of qualification should be required of each practitioner of said profession, and that certain privileges and protection should be afforded to such practitioners;

Now, therefore, His Majesty, by and with the advice and consent of the Legislative Assembly of the Province of Alberta, enacts as follows:

SHORT TITLE.

1. This Act may be cited as "*The Dental Association Act.*"

ORGANIZATION.

2. There is hereby established and constituted in the Province of Alberta an association of Dental Surgeons under the name of The Alberta Dental Association, which shall be a body corporate and politic under the name of "The Alberta Dental Association," and shall be deemed to be a body corporate and politic, and by the said name shall have perpetual succession and a common seal, with power to break, alter, change or make new the same, and by the name aforesaid may sue and be sued, implead and be impleaded, answer and be answered unto in all courts and places whatsoever, and may have, hold, receive, enjoy, possess and retain for the purposes of said association all such sums of money as may at any time be given or bequeathed to and for the use of the same, and by the said name may purchase, take, hold and enjoy any real estate, or any estate or interest derived or arising out of real estate, for the purpose aforesaid and for no other purpose, and may sell, grant, lease or otherwise dispose of the same; but the real estate so held by the said association shall at no time exceed in annual value the sum of five thousand dollars.

3. The following persons shall be members of and shall constitute the said association, namely:

- (a) Every person who, at the time of the coming into force of this Act is a duly qualified and registered member of The College of Dental Surgeons of the North-West Territories under the provisions of "The Dental Profession Ordinance," being chapter sixteen of the North-West Territories Ordinances of 1903 (Second Session), or under any other Ordinances of

the Legislature of the North-West Territories relating to the said college;

(b) Every person who shall hereafter be duly licensed and registered under the provisions of this Act.

BOARD OF DIRECTORS.

4. There shall be a board of directors of said association, which shall consist of five members, who shall, except as hereinafter provided, hold office for two years. Except at the first election of directors after the passing of this Act, three of said directors shall be elected each second year. At the first election aforesaid five directors shall be elected, three of whom shall be elected to hold office for two years and two for one year. The three directors at such first election receiving the greatest number of votes shall be deemed to be elected for the two-year period, and the two receiving the next largest number of votes shall be deemed to be elected for the one-year period. In the event of a tie between any candidates at such election the president of the association, at the time such election is held, is authorized to determine which of the parties affected by the tie is elected, or which of such parties shall hold office for two years and which for one year. Any director may at any time resign by letter directed to the secretary; and in the event of any such resignation or of a vacancy occurring by death or otherwise the remaining members of the board, or a majority of such remaining members, shall elect some fit and proper person from among the members of the association to supply such vacancy.

5. An election of directors of the said association shall be held at such place as shall be decided upon by the directors on the second Monday of June in every year, the first election after the passing of this Act being held on the second Monday of June, A.D. 1906. One month's notice of each election of directors shall be given by circular by the secretary to each member of the association, provided that any oversight or omission in giving such notice shall not void the election. If for any reason the election of directors shall not be held on the date specified in this Act, it shall be held on such date thereafter as shall be appointed by the directors or by any ten members of the association in writing by a letter addressed to the secretary.

(a) In the event of the election of directors not being held on any of the days aforesaid, the directors in office shall continue to hold office until their successors are appointed.

(b) The members of the association may, at any election of directors, cast their ballots without being actually present at the place where the election is being held, provided that such ballots shall be sent or handed to the secretary of the association so as to be received by him prior to the hour fixed for the holding of

an election. In the event of ballots so sent or handed they shall be signed by members of the association voting and shall set forth the names of the candidates for whom such member votes. In the event of any such ballot being marked for more names than there are vacancies, such ballot shall be rejected. Ballots so sent or handed shall be enclosed in an envelope and shall be so marked on the outside as to indicate that the envelope contains a ballot.

6. The persons qualified to vote at the said election shall be those licentiates who have obtained certificates of license under the provisions of this Act or any of the Ordinances mentioned in section 3 hereof and who are at the date of such election duly registered under this Act.

7. Until such directors are appointed as herein provided the directors elected at a convention of dentists of the Province of Alberta, held in Calgary during the month of October, 1905, namely, Doctors R. B. O'Sullivan, Calgary; R. C. McClure, Lethbridge; A. E. Aunger, Lacombe; E. M. Doyle, Calgary; O. F. Strong, Edmonton, shall be deemed to be the board of directors of the association, and may exercise all the rights and powers of such board until their successors are elected.

8. The election of directors shall be by ballot, and the licentiates receiving the highest number of votes shall be the directors for the then ensuing term.

9. The secretary of the association shall publish in *The Alberta Gazette* the names of those persons who have been elected members of the board of directors, such publication to be made in the issue of the said *Gazette* appearing next after the said election shall have been held, or so soon thereafter as the secretary can reasonably cause the same to be published.

OFFICERS.

10. The board of directors at their first meeting shall elect from among themselves a president, a vice-president and a secretary-treasurer-registrar.

MEETINGS.

11. The board of directors of the association shall hold two meetings in each and every year in such place as may from time to time be fixed by the board, for the purpose of conducting examinations, granting certificates of license and doing such other business as may properly come before them. Such meetings shall be held on the second Monday in January and July of each year and may be continued or adjourned until the business before the board is disposed of.

12. The said board shall have no power to transact any business of the association unless a majority of the members of such board be present.

POWERS OF THE BOARD.

13. The board of directors shall from time to time make such rules, regulations and by-laws as may be necessary for the better guidance, government, discipline and regulations of the said board and of the profession of dentistry and for the carrying out of this Act;

Provided that such rules, regulations and by-laws shall, before coming into force, be approved by the Lieutenant-Governor-in-Council.

14. The board of directors of said association shall also have the authority to examine candidates, both for intermediate and final examinations, and to appoint examiners to assist them in conducting such examinations or such portions thereof as they may desire, and they may accept the report of such examiners in respect to the said examinations or any portions thereof, and the directors may grant certificates of license to practice dental surgery in this province.

15. The said board shall also have power and authority to appoint one or more examiners for the matriculation or preliminary examination of all students entering the profession, or may accept, in lieu of such matriculation or preliminary examination, evidence that any student has passed any other satisfactory examination: Provided that the examiners so appointed shall be approved by the Minister of Education.

16. The board shall also have the power and authority to fix and determine the period for which every student shall be articulated and employed under some duly licensed and registered practitioner and the examinations necessary to be passed, including such intermediate examinations as the board may think proper, and including the curriculum of studies to be pursued by students, and to fix and determine the fees to be paid into the hands of the treasurer of the association before the applicant shall receive a certificate of license to practice the profession of dentistry or be entitled to registration under this Act, and also to fix the annual fee to be payable by each member of the association.

Provided that the fees hereinbefore mentioned shall not in any case exceed those set forth in the following schedule of fees:

Matriculation of students	\$10.00
Examination for students	40.00
Examination for other than students	50.00
Registration	50.00

17. The matriculation or preliminary examination as provided in the fifteenth section of this Act shall be passed by all

students prior to entering into articles of indenture with a licentiate of dentistry, provided that a certificate from any recognized university of the Dominion of Canada that the intending student has matriculated according to the curriculum of any such university, or a certificate from the Department of Education that the candidate has a standing equal to that required for second class non-professional certificates of teachers, shall be taken in lieu of the matriculation or preliminary examination aforesaid. The commencement of the term of any articulated student shall date from the signing of his articles as aforesaid.

18. The board of directors shall, at its regular meetings, examine or cause to be examined all candidates for license to practice dentistry, and for registration under this Act who present themselves pursuant to the provisions of the next succeeding sections.

19. Every person being desirous of being examined by the said board touching his qualifications for the practice of the said profession of dentistry shall, at least one month before the sitting of said board, pay into the hands of the treasurer the required fees and furnish him satisfactory evidence of his term of apprenticeship having been fulfilled, and as to the applicant's integrity and good morals.

20. The following persons, upon payment of the required fees, shall be entitled to receive certificates of license to practice dentistry in this province from the board of directors of said association, namely:

(a) Any person who is a graduate of any school or college of dentistry, or a member of any dental association recognized by order in council as hereinafter provided, and produces sufficient evidence of identity and passes the final examination prescribed for the admission of students to practice.

(b) At any time after the passing of this Act the Lieutenant-Governor may by order-in-council set forth and declare the names of such schools, colleges and associations the graduates of which shall be entitled to receive certificates of license as aforesaid, and may at any time by further order-in-council recognize any other school, college or association, or rescind any former order-in-council recognizing any such school, college or association, and until an order-in-council is passed refusing recognition to any school of dentistry of any of the provinces of the Dominion of Canada having authority by law to grant certificates of license or diplomas to practice dentistry or any association or school having like powers in the United Kingdom of Great Britain and Ireland, any graduate or member of any such school or association who passes the final ex-

amination prescribed for admission of students to practice shall be entitled to receive a certificate of license as aforesaid.

or more members of the association as representatives of the

(c) The board of directors shall have power to appoint one association upon the Dominion Dental Council, and the board shall, so long as represented on the said council, accept the certificate of qualification of the said Dominion Dental Council as a qualification sufficient without further examination for the granting to the holder thereof of a license to practice dentistry in the Province of Alberta, provided such certificate is accompanied by satisfactory evidence of the good moral character of the applicant.

21. If the board is satisfied, by the examination provided for in the eighteenth section of this Act, that the person is duly qualified to practice the profession of dentistry, or that he possesses any other of the foregoing qualifications, and is further satisfied that the applicant is a person of integrity and good moral character, it shall grant him a certificate of license subject to the rules, regulations and by-laws promulgated under the authority of this Act, and the title of "Licentiate of Dental Surgery," which certificate and title shall entitle him to all the rights and privileges of this Act, subject, however, to the provisions of this Act respecting registration.

22. Every certificate of license shall be sealed with the corporate seal of the association and signed by the board of directors of said association, and the production of such certificate of license shall be *prima facie* evidence in all courts of law and in all proceedings of whatever kind of its execution and contents.

23. No diploma or certificate of license shall be granted to any person under the age of twenty-one years.

REGISTER—REGISTRATION FEES.

24. Every person holding a valid and unforfeited certificate of license to practice dentistry under the provisions of this Act, and who on or before the second Monday of January in each year shall have paid to the Registrar appointed by the said board a registration fee of two dollars, or who, having during the then current year obtained a certificate of license from said association to practice the profession of dentistry, forthwith pays to the said Registrar a registration fee of two dollars, shall, subject to the other provisions of this Act, and who on or before the second Monday of January in each year shall have paid to the Registrar appointed by the said board a registration fee of two dollars, or who, having during the then current year obtained a certificate of license from said association to practice the profession of dentistry, forthwith pays to the said

Registrar a registration fee of two dollars, shall, subject to the other provisions of this Act, be entitled to have his name entered in the register referred to in the next succeeding section of this Act; and a copy of such register, certified by the said Registrar, shall be evidence in any court of justice in Alberta that the persons therein named are the members of the said association for the said year.

25. It shall be the duty of the Registrar, as nearly as possible in each year, to make a correct register, in the form in Schedule A to this Act, of the names and addresses of all persons who may be entitled to registration under this Act as members of the said association for the then current year.

26. No person shall be entitled to have his name on the said register unless the Registrar is satisfied by proper evidence that such person is entitled to be registered, and any appeal from a decision of the Registrar shall be decided by the board of directors of said association.

(2) Any person dissatisfied with the decision of the Board of Directors with respect to the sufficiency of the evidence produced by him of his having passed a sufficient preliminary or matriculation examination or of his having received a diploma from a recognized college or association, or a college or association mentioned in subsection (b), section 20; may appeal to the Minister of Education, whose decision shall be final.

27. If it shall at any time be proved to the satisfaction of the said board that the name of any person has been improperly inserted in the register for the year, such name may be erased therefrom by order of said board.

28. Upon any person being registered under this Act he shall be entitled to receive a certificate under the corporate seal of said association and signed by the Registrar, in the form in Schedule B to this Act or to the like effect.

29. The secretary of the said association shall, on or before the first day of February in each and every year, enclose to the Provincial Secretary a certified list of the names of all persons then registered as members of the said association for the then current year.

WHO MAY PRACTICE.

30. All persons registered under this Act, and no others, shall be entitled to practice the profession of dentistry in the Province of Alberta, and no person shall be entitled to any of the privileges of a licentiate or member of the said association, or to practice the profession of dentistry, who is in default in respect of any fees payable by him by virtue of this Act.

31. No person shall be entitled to recover in any court of

law for any professional services rendered or materials provided by him in the exercise of the profession of a dentist, unless he be a duly and legally qualified licentiate of dentistry and duly registered under the provisions of this Act.

FORFEITURE—PENALTY.

32. If any person not holding a valid certificate of license as aforesaid, or not duly registered, shall practice within this province the said profession of dentistry, either publicly or privately, for hire, gain, or hope of reward, or shall voluntarily and falsely pretend to be a duly qualified licentiate of dentistry, or assume any title, addition or description implying or calculated to lead people to infer or believe him to be a duly qualified licentiate of dentistry, he shall be liable, upon conviction in a summary manner before any justice of the peace having jurisdiction where the offence is committed, to a penalty not exceeding two hundred dollars and not less than fifty dollars for the first offence, and for each and every subsequent offence to a penalty of four hundred dollars.

33. In case a charge is made against any licentiate of unprofessional conduct, or other misconduct provided for by the by-laws passed or to be passed under the provisions of any of said former Acts or this Act, the board of directors shall have power to hear and determine the same, and for this purpose to summon witnesses before them and administer an oath or affirmation to such witnesses; and if any licentiate shall be found guilty of the charge preferred against him he shall forfeit his certificate and title and the same shall be cancelled. Such forfeiture, however, may be annulled and the said license and all rights and privileges thereunder fully renewed and restored by said board in such manner and upon such conditions and terms as the said board shall think fit:

Provided, however, that nothing in this Act contained shall empower the said board to deal with any criminal or other offence provided for by law.

34. Any licentiate who shall be convicted of any malpractice shall forfeit his license and the same shall be cancelled; but the board shall have power to restore the same if it shall think fit and proper, notice of such restoration to be given for two weeks in some local newspaper to be determined upon by the board.

35. All prosecutions under the provisions hereof may be brought and heard before any justice of the peace having jurisdiction where the offence is committed, and such justice of the peace shall have power, in addition to the aforesaid penalty, to award payment of costs; and in case such penalty and costs be not paid forthwith after conviction, he shall have power to issue

a warrant of distress therefor against the goods and chattels of the party so convicted, and in default of distress to order imprisonment for any period not exceeding six months.

36. Any penalties imposed by this Act may be also proceeded for and recovered by suit in any court of law having jurisdiction, and one-half of all penalties recovered shall go to the prosecutor, and the remainder shall be paid to the treasurer of the said association and form part of the funds of the association. Any person may be complainant or prosecutor:

Provided always that every such prosecution shall be commenced within six months of the alleged offence.

37. In any such prosecution and trial the onus of proof as to being a legally qualified licentiate of dentistry and a duly registered member of said association is upon the person charged.

38. Nothing in this Act contained shall interfere with the privileges conferred upon physicians and surgeons by the various Acts relating to the practice of medicine and surgery in this province; but in case a regular physician and surgeon shall desire to practice dentistry as a profession, and to publicly avow himself as a practitioner of said profession of dentistry he shall first obtain a license from said board of directors by paying the necessary fees and passing an examination in operative and mechanical dentistry only.

39. Nothing in this Act shall prevent any duly indentured and registered student of dentistry from receiving clinical instruction and practice under the personal supervision of a member of the said association.

MONEY—FEES.

40. All moneys forming part of the funds of the said association shall be paid to the treasurer and shall be applied to carry on the objects of this Act.

41. All fees that are now payable under the provisions of this Act and the Acts referred to in the third section of this Act and the by-laws of the said association shall continue to be payable until duly changed by the by-laws of the association pursuant to the provisions of this Act.

FORMER BY-LAWS, ETC.

42. All rules, regulations and by-laws of the College of Dental Surgeons of the North-West Territories in force at the passing of this Act shall until the first meeting of the Board of Directors be the rules, regulations and by-laws of the said association.

SCHEDULE.

The following are the schedules referred to in this Act:

Schedule A. (Section 25.)

REGISTER.

NAME	RESIDENCE	QUALIFICATION
<i>A. B.</i>	Edmonton	Certificate of License, 15th March, 1895.
<i>E. F.</i>	Macleod	Member of (Stating name of college or school and where situate.

Schedule B. (Section 29.)

CERTIFICATE OF REGISTRATION.

I hereby certify that *A. B.*, was, on the
day of , 19 , duly registered as a member
of The Alberta Dental Association, and is authorized to practice his said profession up to the 31st day of December, 19 ,
subject to the provisions of "The Dental Association Act."

(Signed),

E.F.

Corporate seal
of the
Association.

Registrar of The Alberta Dental Association.

Dominion Dental Journal

EDITOR:

A. E. WEBSTER, M.D., D.D.S., L.D.S. - - - - TORONTO, CAN.

3 COLLEGE STREET

To whom all Editorial Matter, Exchanges, Books for Reviews, etc., must be addressed.

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*All Communications relating to the Business Department of the Journal must be addressed to
THE NEBBITT PUBLISHING COMPANY, Limited, 44 Adelaide Street West, Toronto, Canada.*

VOL. XIX

TORONTO, APRIL, 1907.

No. 4.

THE PUBLIC AND DENTISTRY.

There is good reason for believing that the dental profession will have to justify its existence before the public within a short time. It will be compelled to satisfy the public that it should have a charter from the Provincial Legislature to regulate the practice of dentistry. When the Dental Act of the Province of Ontario was originally passed, all that was necessary was to satisfy the Cabinet of its desirability. At present it is necessary to satisfy every member of the Legislature, or the act will be circumvented by the Private Bills Committee. No power outside of the polling booth will prevent such pernicious legislation. Hence it is necessary for the profession of dentistry to justify its existence to the public in order that members

of the Private Bills Committee may not make incompetent persons dentists by act of parliament.

At the present time the view is pretty generally accepted that the dentist is a fine mechanic and nothing more. Few people, even among the educated classes, will admit that he is anything more. They will admit that he can freeze the gums and extract teeth, but what of that? If this be a correct view, the man in the street says, why should the dentists have a charter from the government to regulate their practice. This question is being persistently asked, and the time has come when we must answer it. It is not enough to explain it to the Cabinet Ministers. It must be explained to all the members of the Legislature and to the general public.

If the practice of dentistry consisted of substituting lost organs by artificial ones and filling cavities of decay in the natural teeth, there would be no more justification for state recognition than the jeweller or the adapter of artificial limbs. It is this limited view of the duties of the dentist which is the millstone of the profession. The public have gotten this view from the dentists themselves. The only literature on the subject of dentistry that ever reaches the public comes from dentists who are advertising the sale of full sets of teeth at half the price of a spring hat; crowns, bridges and fillings, all of which are the work of a mechanic. Besides this, what does the dentist who does not advertise do to give the impression that he is a mechanic only, or at all events not a member of a profession. If he be asked to give an anesthetic he calls a physician to do it, never a dentist. If he extracts a tooth and the blood does not stop promptly, he calls a physician, never a dentist. If he is asked to extract an impacted tooth, he either sends the patient to a physician or asks a physician to help him. If a severe infection should develop about the mouth the dentist sends his patient to a physician, never to another dentist. A fractured jaw is rarely treated by the dentist. A patient faints in a dental office, and the dentist calls a physician. If a patient should need anything other than a tooth filled or extracted, or an artificial one, then he must seek some one else. This is the greatest barrier to the proper recognition of the dentist's duties. Dentists who practice as the foregoing would indicate would proudly exhibit beautifully polished jewellery for the teeth, and

small, blue-white false sets. While ever the views and methods of these two classes of practitioners are the only ones which come before the public dentistry as it is practiced by the remainder will never be recognized.

It may be said that the majority of dentists do not practice as mere mechanics, but of what influence is even the majority of dentists who only meet those who come under their care. It is hardly recognized by those who oppose educating the masses in dentistry that they rarely see a thousand patients in a lifetime. It is a recognized fact that six hundred people will keep one dentist busy year in and year out. An article on dentistry in one issue of the *Toronto Saturday Globe* would have more influence than a dentist's whole lifetime in his office. It is not recognized by some dentists, who imagine that their profession is so important and well known, that there is less than eight hundred thousand people in this province who ever visit a dentist at all. What influence have we over the remaining two millions if we do not reach them through the printing press. Has dentistry fully justified its existence, or has it justified a state privilege, if only a quarter of the population of this province knows what a dentist is for. Dr. Moyer, after being out of dentistry two years, goes even further, and says not one-tenth of the people know anything of the comforts a dentist can bestow. These are facts which should awaken the dental profession to its responsibilities to the public. What right have dentists to say that this man or that woman is ignorant of dentistry when they have agreed with the Government to educate them and have neglected to do so. There is not a disease among cattle which is as prevalent as decay of the human teeth that every stock-raiser does not know of its history, its prevention and its treatment. They know, because the Government has sent out bulletins explaining these things. How many bulletins have the dentists sent out on the history, the cause and the treatment of decay of the human teeth, or the development, the functions and the abuses of the human teeth, or the value of the teeth in mastication and digestion, or the relation of an unclean mouth to diseases of the nose, throat, lungs, stomach and intestinal tract, or the relation of the teeth to tuberculosis and cancer, or the condition of the mouth as an index to general diseases, or

the mouth as a mark of beauty and culture? Or have they ever explained to the public the cause of toothache, or what can be done for it in the home or by the physician or by the dentist; or have they ever explained the effects of mouth-breathing on the hearing, the form of the nose, the arrangement of the teeth and the formation of the lower part of the face; or have they ever explained to the public what can be done to prevent and treat such defects and deformities? What have dentists done to inform the public what can be done for diseased, fractured or dislocated teeth and jaws, or what have they done to inform the public of the danger of infection from one mouth to another, or what have they done to inform the public of the effect of the loss of the teeth in early life, or what have they done to inform the public of the effect of an unclean mouth and defective teeth on the stature and physique of the nation, or what have they done to inform the public of the uses, values, effects and dangers of both local and general anesthesia? Dare anyone say that the public are not interested in these subjects? Are they not suitable texts for an article for the public to read? The American Medical Association has entered the field of public medical education in venereal diseases, a much more critical field to enter than public education in dentistry. Will any dentist say that he has informed his patients on even any one of the subjects mentioned? No dentists as a rule truthfully tell their patients about what degree of comfort and durability may be expected from their operations. The fact is, patients as a rule are ignorant of what a dentist can do for them.

The profession owes it as a duty to the public to inform them of how they may be comforted and made to live longer, happier and more beautiful lives. And if the public had this knowledge neither the quack nor the incompetent would flourish, nor would the public allow its representatives to make dentists by act of parliament. In fact, the representatives themselves would be ashamed to be a party to giving an incompetent person a license. Dentists must justify their claims for state recognition before the public. The millions unknown to the dentist must find him out.

HON. S. W. McINNIS.

We are proud to record the appointment of Dr. S. W. McInnis, of Brandon, Manitoba, as Minister of Education and Provincial Secretary of the Manitoba Legislature. This is the first occasion in Canada of a dentist reaching the distinction of a Minister of the Crown. Dr. McInnis has taken a leading part in dental education and dental progress in Canada. He is at the present time President of the Canadian Dental Association and Vice-President of the Dominion Dental Council, a member of the Dental Board of Manitoba, and has been an associate editor of the DOMINION DENTAL JOURNAL for twelve years. Dr. Dr. McInnis has the rare quality of being a most genial and companionable gentleman, and at the same time the power to maintain a point in debate with force and vigor. No man in dentistry in Canada to-day deserves success more than the Hon. S. W. McInnis.

A VOTE IN THE LEGISLATURE.

The third reading of the bill to give Miss Holmes a license to practise dentistry in Oxford County for two years passed the House on division, 35 to 44. It was expected that the names of the voters would have been recorded, so that the dentists might look after those who supported the bill. The House intentionally avoided having their names recorded. However, the leaders in support of the bill are known, and if dentists are as interested as they pretend to be, they can use both their votes and influence against them in the next election, which will likely be about a year from the coming June. There is no use going about the question. Dentists must support the members who maintain their standing and oppose those who oppose their standing. Donald Sutherland, who introduced the bill, pretended to his constituents that he was not in favor of the measure; in fact, he was anxious for an excuse not to support the bill. His constituents may rest assured that such talk is all moonshine. Before he introduced the bill he was assured of its success by a personal canvass, and on the third reading of the bill, when there was

some fear of its defeat, he supported the bill by a speech in the House and by his vote. Mr. Whitney aimed to make it clear that the members were at liberty to vote whatever way they pleased. He really talked in favor of the bill, but voted against it. He voted for a similar bill in veterinary. Consequently, little is to be expected from Mr. Whitney. Mr. Foy, the Attorney-General, supported the bill by both speech and vote. Mr. Hanna opposed the bill in a vigorous speech. The Minister of Education, Dr. Pyne, was not in the House. Dr. Reaume and Mr. Monteith opposed the bill. Mr. Hendry, of Hamilton, supported the bill. Mr. Adam Beck, though not in the House when the vote was taken, was one of the most persistent lobbyists in Miss Holmes' favor. Mr. Hoyles, Mr. Lucas, Mr. Downey, Mr. Craig, Mr. McNaught, Col. Clark, Mr. Pratt, spoke and voted against the bill. Mr. Gamey, Mr. Thompson, Mr. Duff, Mr. Dunlop and many other Conservatives supported the bill. Among the Liberals are to be found some of the most bombastic supporters of special legislation. One Clark, from Northumberland, would disgrace a back township side-line farm hand in matters of fitness of things and appreciation of education and culture. John Auld, of Essex, quietly managed the campaign among the Liberal members for Miss Holmes. A. G. McKay, a lawyer from Owen Sound and a Minister of the Crown in the late Ross Administration, supported the bill in committee and in the House. He suggested and succeeded in carrying the bill as it stands to-day. Mr. Harcourt opposed the bill with all his ability, and so did Mr. Studholme, of Hamilton. Mr. May and Mr. McDougall opposed the bill. As no official record was made of the vote, it will be somewhat difficult to be certain of what way some of the members voted, but a little inquiry will disclose the fact.

Editorial Notes

DR. G. ARTHUR ROBERTS, Secretary of the Ontario Dental Society, died April 14th, 1907.

THE Board of Directors of the R. C. D. S. meet April 22nd, 1907. Convocation April 26th, 1907.

For Sale.

FOR sale, *The Dental Cosmos*, complete set from 1860 to 1900, first 25 volumes bound. Address "Dentist," 45 King Street East, Hamilton, Ont.

Dominion Dental Journal

VOL. XIX.

TORONTO, MAY, 1907.

No. 5.

Original Communications

PUS FORMATION.

BY J. J. MCKENZIE, B.A., M.B.

Read before the Toronto Dental Society.

In undertaking this evening, at the request of your President, to address you upon the subject of "Pus Formation" from the standpoint of general pathology and bacteriology, I am aware that I have undertaken a very serious task, in that it will be necessary to compress into the limits of a short paper a discussion of many of the fundamental phenomena of pathology.

In the study of inflammation and its results and in the interpretation of inflammatory phenomena, our standpoint has been very materially changed since the days of Virchow and Cohnheim. The viewpoint has been wonderfully broadened, the significance of the process is better understood and unity of interpretation has been the result.

This change has been largely the result of experimental bacteriology, and, although there are many phenomena which remain as yet unexplained, especially in the field of such chronic inflammatory affections as pyorrhea alveolaris, yet day by day we are gaining clearer insight, and the result in the end will be a more practical and scientific method of treatment.

It is not necessary here to remind you of the old and limited view of inflammation, which required that there should be present the four cardinal phenomena of *rubor, calor, dolor, tumor*. We have long passed the stage of knowledge where such a view would suffice.

Adami, in his article upon inflammation in Allbutt's *System of Medicine*, after discussing the difficulties of definition, quotes Burdon Sanderson's definition as "The process of inflammation is the succession of changes which occur in a living tissue when it is injured, provided the injury is not of such degree as at once to destroy its structure and vitality." He suggests that this includes too much, and instances the hemorrhage in the liver when it is injured, but it seems to me if one reads into the definition the view of vital cellular reaction, it approaches very closely to an ideal one. Adami himself postpones his definition to the close of his article, after he has considered all the phenomena at length, and defines it as follows:

"As the series of changes constituting the local manifestations of the attempt at repair of actual or referred injury to a part, or, briefly, as the local attempt at repair of actual or referred injury."

I have not time to-night to enter into the arguments in favor of such a definition, but I would call your attention to the important point, that it recognizes the object of the inflammatory process, and in that it differs materially from the view of pathologists, who would look upon inflammation as something injurious in itself, and would forget that inflammation is at bottom a salutary process, which may or may not be successful in attaining the results desired.

For the dental pathologist such a view of inflammation is of importance, as it includes not only all the classical phenomena of pulpitis, but also the first trace of reaction in the odontoblast layer to the irritation produced by caries.

But although we may recognize the essential inflammatory phenomena associated with the healing of aseptic wounds, yet in the majority of inflammatory processes, and in the one which we have specially to consider to-night, purulent inflammation, the important cause is the introduction of bacteria into the tissues, and the primary changes which occur in the inflamed area are directed towards the controlling of invading bacteria.

Leaving the discussion of how the bacteria gain entrance into the tissue, let us consider for a moment the classical phenomena of inflammation in the pulp or in any similar tissue. You all remember the description of the classical experiment upon the web of a frog's foot, where the process can be followed under the microscope. You will remember that the first visible reaction is seen in the capillaries and veins of the part, that the vessel dilate (sometimes preceded by a very transient contraction), and the corpuscles, instead of flowing comparatively rapidly in the thin axial stream, crowd into the dilated vessels and stagnate there. At the same time the white cells begin to collect in the marginal zone, at first simply sticking to the wall, then beginning to pene-

trate between the individual and endothelial cells, and gradually, by the process of diapedesis, leaving the capillaries to appear in the tissue spaces about them. This diapedesis is not confined to the white cells, but the reds also appear, although their migration is a passive, not an active, one, and with the cellular exudate there is poured out into the tissue spaces a fluid exudate which more or less closely resembles in chemical character the plasma of the blood. The exudate will vary according to the intensity of the damage to the tissues and the resulting reaction upon the part of the vessels and the cellular elements of the blood. But in each case we recognize that the formation of the exudate is rendered possible by the stasis of the blood in the vessels, and this stasis is the result of vaso-dilatation.

Now, let us consider for a short time what are the means of defence of the body against invading bacteria and their toxic products.

A very simple method of limiting the action of bacterial toxins of a mild character would be by dilution and by washing away these products out of the lymph circulation. It is possible that to a certain extent the fluid exudate may do this in the presence of mild irritants. It is probable, however, that in the majority of infected areas the diluent action of the lymph is not of very great importance, although, as we will see when passive hyperemia is applied to the actual treatment of acute infections, as in Bier's method, this may be very important.

When we, however, study the reaction of the body to bacteria and their products, we see that the formation of the exudate is all-important.

Let us consider for a moment the manner in which bacteria damage the body. We recognize now, as a result of the bacteriological studies of the past years that the damage is done by the toxins of these organisms. These may be of two types, the easily soluble toxins, which are best seen in such infections as diphtheria and tetanus, where the organism manufactures a poison which passes into the circulation, is carried to distant parts, and gives rise there to many of the accompanying phenomena of the infection. The other type is not so readily soluble, is intimately bound up with the bodies of the bacteria, forms, in fact, an integral part of their protoplasm, and is only liberated into the tissues when they disintegrate. These have been called endotoxins to distinguish them from the extra-cellular toxins of the other class.

Now, in regard to the first class, we know that the body is able to manufacture certain anti-bodies, so-called anti-toxins, which neutralize the toxins and then throw them out of action.

In the treatment of diphtheria by its anti-toxin we have a striking example of this. How far the presence of such anti-bodies in the blood plasma and consequently in the fluid exudate is of influence in combating the infections which ordinarily occur

in tissues such as the pulp, and which are most frequently due to pyogenic organism is an open question. The facts of bacteriological investigation hardly support the view, for the reason that we do not find these organisms producing the typical extra-cellular toxins which require anti-toxins. This is especially seen in the failure of the anti-streptococci serum to produce well-marked cures in such a streptococci infection as erysipelas, or in septicemia. It would be rash, however, in the present state of our knowledge to deny the presence of some readily soluble toxine in the pyogenic infections against which a suitable anti-toxin would act, and, if that were possible, another important function of the fluid exudate would be found.

Another fact which bacteriological research has taught us is that the blood plasma is in itself inimical to the life of bacteria—that it has bactericidal powers. This is probably not true for all bacteria. Some are much more easily killed by the blood plasma than others, and some do not seem to be affected by it at all. Organisms such as the cholera spirillum and the typhoid bacillus may be readily killed by these substances in the plasma, and this is especially seen in the action of the blood of a person who has passed through one of these diseases. The blood has increased bactericidal powers, and the immunity is due to the condition.

In the case of the pyogenic organisms, on the other hand, this does not seem to be the case, so that for these organisms the bactericidal activity of the exudate may be of no significance, but whether it may not play a part in some of the special infections of the pulp canal is unknown, and it is well to bear it in mind.

The blood plasma contains in solution another large group of bodies called the agglutinins. The effect of these bodies is to cause the bacteria to adhere and form clumps, and the exact significance of this for the phenomena of infection is not at once evident, but it is probable that the agglutinating activity of the plasma prevents the rapid spread of organisms to distant parts, which would be so much easier if they were not caused to clump in larger and smaller masses. In exposing the bacteria to these agglutinins the presence of the fluid exudate must have a salutary influence in limiting the spread of the infection.

There is, finally, in the blood plasma and in the fluid exudate another group of substances which are all-important in the pyogenic infections, but before considering these we must look for a moment at the cellular elements of the exudate, and of these at the white cells.

In observing an inflamed area under the microscope we see these leucocytes first sticking to the capillary walls and then actively migrating into the tissue spaces, and if we study the direction of their migration by appropriate methods, we see that they are definitely moving towards the point of infection.

It has long been recognized that this migration is due to a

definite response on the part of the leucocyte to a stimulus. They are actually attracted by the products of the bacteria, and consequently approach the bacteria themselves. We say that they have chemiotactic irritability, and that the bacteria have a positive chemiotactic action upon the leucocyte.

The reason for this migration is at once seen when we make stained preparations of the cellular exudate from an area of inflammation. We find that the leucocytes have picked up the invading bacteria, and if appropriate methods are used, degeneration of the ingested bacteria can be seen.

It is not surprising that when Metchnikoff first studied this phenomenon that he concluded at once that the leucocytic migration was for the purpose of destroying the bacteria. His explanation was not at first accepted by many pathologists, but to-day it is universally accepted, and the phagocytic activity of the leucocyte is recognized as one of its most important functions.

However, the mere invasion of the infected zone by leucocytes does not in itself mean phagocytosis and destruction of the bacteria. Researches of the past few years have shown that in order that phagocytosis may take place there is another constituent of the blood required, a substance which prepares the bacteria for phagocytosis. The importance of this material may be shown by a simple experiment. If you take a suspension of human leucocytes, which may easily be obtained by a simple piece of technique; wash them free from blood plasma and mix them with a suspension of a pyogenic organism; then maintain the mixture at blood heat for fifteen or twenty minutes, and from this prepare microscopic specimens, you will find that the leucocytes have not picked up a single organism; they have remained inactive alongside the bacteria, although an examination of them upon the warm stage of the microscope will show that they are all living.

If, on the other hand, we mix a small quantity of blood serum with the suspensions of leucocytes and bacteria, or if we treat the bacteria first with blood serum before mixing them with the leucocytes, and then place them together at blood heat for fifteen minutes, we find in the microscopic preparations that every leucocyte has engulfed large numbers of bacteria; in fact, I have seen leucocytes under favorable conditions pick up as many as fifty or a hundred bacteria in fifteen minutes' time, so that their protoplasm was packed full of the organisms. It will be seen from this experiment that there is something in the blood serum, and we can show that it is also in the plasma, which, acting on the bacteria, so changes them that phagocytosis may take place. To these substances Sir A. E. Wright, who first studied them, has given the name of opsonin. Exactly how they act we do not know, but their presence is necessary to phagocytosis, and the persistence of many types of chronic purulent inflammations, as, for instance, boils, pimples,

pyorrhea, is apparently chiefly due to diminished opsonic power of the blood.

We thus see that when, as a result of the hyperemia, which ushers in the inflammatory process, an exudate, consisting of fluid and cells, passes into the tissue spaces, it brings with it all these various instruments which nature uses to fight infection. The pouring out of the exudate is definitely for that purpose.

The character of the exudate varies much in different types of inflammation, so that we may speak of it as serous where the cellular elements are few and the fluid portion is poor in coagulable material. When the cellular elements become more prominent we may speak of it as sero-purulent or fibrino-purulent if coagulable material is a marked feature, or, if the cellular elements predominate, we may use the simple term purulent. The varying character of the exudate doubtless is determined to a large extent by the character of the infecting organism, but it is partly determined also by the reactive ability of the infected individual.

In the case of certain bacteria, however, the tendency is generally for the inflammatory exudate to assume a purulent character, and in consequence we speak of such organisms as pyogenic or pus-producing, and in pus production we simply have the collection of enormous numbers of polynuclear leucocytes, which, on account of their chemiotactic irritability, have been attracted to the point of infection. The pus cell is, in fact, a leucocyte, and it is a mistake to speak of it as a dead leucocyte. Probably fifty per cent. of the leucocytes in a collection of pus are still living, and only so long as they are living and active can they carry on phagocytosis, although we must not assume that when the leucocyte dies there are not still important functions performed by the products of its disintegrating protoplasm. Indeed, there is evidence in favor of the view that certain of these protective substances may originate from the leucocyte itself during disintegration.

We must, therefore, look upon that collection of white blood corpuscles which we call pus as brought there for a very definite purpose, namely, to remove the bacteria. We do not mean, of course, that the leucocytes are advancing to the point of invasion with set purpose, but the chemiotactic irritability makes it imperative that they move to the point where the bacterial endotoxins are being liberated. So strong is that attraction that the formation of pus to any extent anywhere in the body is indicated by an increase of the white cells of the circulating blood, so that their number increases from 7,000 to 8,000 per c.m.m. rapidly to 10,000, 12,000, 15,000, 20,000 or even more. In fact, to-day one of the most important means we have of recognizing the presence of a purulent infection anywhere is by this so-called leucocytosis.

If these, then, are the objects of the cellular and fluid exudates, it must naturally occur to one at once to ask, why are they not

always successful? It is a common observation in surgery to find pus formation becoming chronic, abscesses do not always proceed rapidly to healing, and many purulent infections of the skin and of the mucous membranes show a special tendency to become chronic. In the skin, pustular acne or furunculosis are good examples; in the mouth, the omnipresent pyorrhea alveolaris.

In the skin affections above referred to, A. E. Wright and his associates have conclusively shown that these individuals are lacking in opsonins. As he expresses it, their opsonic index is low. They have not so much as normal individuals, and the treatment introduced by Wright conclusively shows that these infections, in the majority of cases, can be cured by raising the opsonic index, *i.e.*, stimulating the production of opsonins by inoculation. The blood flowing to the point is then higher in opsonins than normally, and more necessarily combine with the bacteria, and consequently phagocytosis becomes more active.

There is no doubt, also, that the mechanical condition obtaining about a collection of pus must of necessity affect the opsonic activity, or rather the possibility of exposure of bacteria to opsonins. Where the infection is closed about by dense connective tissue, the mere mechanical collection of the exudate must limit the amount of opsonin coming in contact with the bacteria. The fluid exudate at first, but especially the leucocytes crowding into the focus, must more and more compress the vessels which are carrying the blood to the point, and as a result if the first rush of exudate does not clear away the invader, the exudate itself hinders its salutary action; it gets in its own way; a pressure anemia results, death of the leucocytes and of the tissue elements about them rapidly occurs, and the bacteria, instead of being endangered, are walled about by a mass of necrotic tissue. One of my own pupils showed quite conclusively that fibrin tended to filter out and remove opsonin from the blood serum, and it is well known in regard to other protective substances in the blood that they are quickly absorbed by dead tissue. Consequently the tension within the abscess is frequently a very important reason for its not being absorbed. As a matter of fact the leucocytes keep crowding in, possibly coming from more and more distant capillaries, and the pressure and anemia gradually leads to a solution of the tissue holding it in, and the abscess bursts. To evacuate pus wherever found is one of the old axioms of medicine, and to-day we know that the importance of this is in the fact that the tension removed, the blood returns with threefold energy to the abscess wall, the fluid part of the exudate reappears, and the bacteria are destroyed.

But, you may very well object, this does not always happen, one boil is followed by another, and so on. It perhaps is not altogether clear why this is so. In a large number of cases inoculation treatment so increased the opsonic index that the infection

stops, but in some people this treatment is not successful, or, if successful for a time, they tend to go back. It is difficult to keep the opsonic index up. It is possible that many of these cases are suffering from some form of autointoxication, which lowers all the resisting powers of the body, and, at any rate, many of these cases get well under general treatment, such as tonics, diet, change of air, etc. It is possible also that there may be some chemical fault in the blood which prevents the formation of proper exudate.

A puzzling type of chronic infection which I am sure you are all thinking about is pyorrhea alveolaris. Here we have a purulent inflammation, perhaps the most typically chronic of any in the body. I am inclined to think that the majority of dentists view this as a constitutional disease, and, at any rate, use constitutional remedies to assist them in their struggle against it. But I think you will find, when you look into the history of our knowledge of any of the more chronic infections, that this explanation of constitutional weakness has been the more often used the less we knew. It is practically a confession of ignorance to say that pyorrhea is constitutional, and this in spite of the fact that constitutional remedies may assist in the fight against it.

If one makes a microscopic preparation of pyorrhoeal pus one sees of course enormous numbers of bacteria of all kinds, and one sees large numbers of pus cells, but one is struck at once by the fact that there is no phagocytosis. The bacteria are all outside the leucocytes, and this is not because the leucocytes are dead—one can demonstrate on the warm stage of the microscope that some are still living. We know now, as I have shown, that if phagocytosis does not take place when leucocytes and bacteria are brought together, it must be due to the absence of opsonins, so that we must conclude that there is no opsonin present in the pyorrhea exudate. Why is this? There is no question of tension here. The possible absorption by the necrotic walls of the pocket may play a part, but I have thought recently that there may be another factor for which, however, I have no positive proof. We know as the result of work upon the coagulation of the blood that calcium salts are necessary; that, in fact, the blood coagulates the more rapidly the more lime is present. Now, Wright has demonstrated that under certain conditions of high calcium content of one blood plasma, the blood clots so quickly when it is poured from the vessel that a dry fibrin rather than a fluid exudate forms; as a result the infection is not cleared out. In certain cases he has treated such a condition successfully by the administration of citric acid, which in some way lowers the calcium content and certainly slows markedly the coagulation. He claims that in these cases the exudate immediately became more fluid and the infected wound healed up.

We have no observation upon the coagulability of the blood in pyorrhea, but from the prevalence of the disease we are not likely to find that the amount of calcium in the flowing blood would have much influence, but when one realizes that in the pockets about the teeth what always is present are abnormal deposits of calcium salts, it may be that this plays an important part in preventing the escape of a sufficient amount of the fluid part of the exudate which contained opsonin to bring about a healing of the abscess.

However, in whatever way we approach the question of the treatment of purulent inflammation, we see that that treatment is successful in so far as we assist the natural forces of the blood to combat the infection. A very striking example of that is seen in a method of treatment of tuberculosis and acute infections which was introduced by Bier, of Bonn, and which is described in detail by him in his book, "Hyperæmie als Heilmittel." In Bier's method he produces a tremendous passive congestion by bandaging a limb high up above the infected spot, so tightly as to cut off the return of blood through the veins, whilst permitting the blood to flow through the arteries. As a result an extreme edema of the part below the bandage is brought about. This is maintained sometimes for many hours; then the bandage is removed, and the fluid exudate is permitted to drain back into the body. This may be repeated a number of times, but one is struck with the remarkable results which are reported from this treatment, especially in acute infections. When one considers Bier's treatment from the standpoint of the protective substances of the blood one sees at once that it is eminently rational, in that it insures a flooding of the infected area with all these substances.

In conclusion, I think that we may say that only those methods will be successful which conserve and assist nature, and nature's method is to bring to the seat of infection a blood rich in the natural protective substances so as to form an exudate properly fitted to combat the invading organisms.

DISCUSSION.

DR. WEBSTER.—A paper so carefully prepared and so reasonable in its explanation of the pathological conditions met with in inflammation and pus formation leaves little for discussion. An application of the facts brought out of the treatment of infections met with by the dentist is all I may attempt. About seventy-five per cent. of the time of the dentist is spent in combating infections. In fact, all his efforts are towards restoring the ravages of infections and preventing infections. The dentist should be a student of bacteriology and pathology.

The definition of inflammation given by Prof. McKenzie would satisfy the laity of fifty years ago. Healing without inflammation is a modern notion. It used to be thought that

infections and pus formation were a benefit to the organism. Such are now the views of the most learned. An infection may not create an active inflammation because of its want of virulence or from the lack of reaction by the tissues of the body. A violent reaction is more hopeful than a low reaction accompanied with untoward general symptoms.

Nature attempts to overcome an infection by (1) Dilution of the toxins; (2) by antitoxins, which act upon the readily soluble toxins; (3) the plasma may hinder the growth of the organisms themselves; (4) the plasma has the power to clump or gather organisms into bunches, so that they may not be so readily spread through the general circulation; (5) the leucocytes engulf or disintegrate the organisms, provided the opsonic index is high.

Upon this basis the surgeon's attempt should be to provide nature an opportunity to do her work. Acute inflammations are usually simple to treat, because nature is reacting vigorously in pouring out an abundance of exudate to dilute the toxins, clumping the organisms and preparing them so the leucocytes may destroy them. If there is pressure it should be relieved so the exudate may be permitted to flow freely. The acute alveolar abscess or pericimulitis should be freed from pressure. The chronic abscess has an area about it of pressure anemia which hinders the exudate from coming in contact with the infection, and at the same time prevents the infection from general dissemination. A rational treatment is to drain the cavity and curette the walls or cauterize them until the area of pressure anemia is removed. It is true that some persons are more susceptible to certain infections than others.

DR. ELLIS.—When I was asked to take part in this discussion I expected to see the paper a week or so beforehand, but as I only got it this morning, I have not had the time to go into it thoroughly, so you will kindly excuse me if my discussion is rather crude. The Toronto Dental Society ought to feel pleased that they have had such a paper presented to them. In it are the fundamental basis on which we can practically found our different treatments of inflammatory and pus conditions as connected with dentistry. It is just what we need. I will leave the discussion of the pyorrhea alveolaris side of it to others, and try to discuss it in its relation to pulpitis, putrescent pulps and alveolar abscesses. Pulpitis, when caused by a blow where there is no decay in the tooth, severe inflammation sets up in the contused pulp. Now the question comes up, if the pulp does not recover, but dies, how does the introduction of bacteria take place. The essayist does not explain this. I would like to hear something about the way bacteriae get into the inflamed areas when the cause is not bacterial. However, I think if these cases are taken in time and nature assisted properly, as suggested in

the paper, the pulp will not die, but, by the process of inflammation, heal. Nature must be assisted, but not retarded by elaborate treatments, a ligature to support the tooth, a counter-irritant on the gum, and, if necessary, a little systemic treatment is sufficient.

Pulpitis, when caused by infusion of toxins through dentinal tubules from bacteria in caries where pulp is not exposed, and in the cases where bacteria may get into the pulp through dentinal tubules. If caught in time, if proper treatment is used, pulp can be saved. But remember, we must assist nature, and here again the simpler the treatment the better. We must remove the cause, but must not put in its place a drug which acts as a chemical irritant. Possibly a little systemic treatment here will help to save the pulp. The devitalization of pulps is far too common a practice, and should be stopped. "Where there is life, there is hope."

In treating putrescent pulps we must be very careful, especially where there has been an introduction of toxins and maybe bacteria into the pericementum. The best we can do again is to assist nature, and not increase the irritation by strong drugs. We must here take into consideration the condition of the patient. I earnestly believe, though the essayist has not said so, that in certain cases of putrescent pulps there is an infusion of soluble toxins into the system, thus affecting the patient systemically. I have noticed a difference in the condition of patients where there is great pericemental inflammation. Of course, the cause of the pericemental inflammatory process might be due to lowered resistance of the patient. However, the great thing is to check these conditions before pus is formed outside of the pulp canal. In this connection again I would like to ask, How does the introduction of bacteria into these pulps that die under fillings take place?

In alveolar abscesses we have our greatest field of treatment. We have heard to-night what nature will do for us. Our part is to study the methods we can use to assist nature in each individual case. We must realize that we are not treating an abscess for Mr. Jones, but we are treating Mr. Jones for an abscess. No one can lay down a set rule of thumb for treating these cases. We do know, as the essayist has pointed out, what nature will do, and why sometimes nature does not effect a cure herself. All we can do is to assist, but not over-assist, as nature will resent it. Here is where clinical experience will tell. This is a case in which we must be careful to use no drugs, and no abscess cure which we know nothing about. In the majority of cases a removal of the cause will be sufficient to cure the abscess, such, for instance, as the removal of the putrescent contents of the root canal, and the draining of the abscess through it, and then the insertion of a mild dressing. Then the condition

of the patient comes in again. If the resistance is low, or if any soluble toxins have infused into the system, or if other conditions which the essayist has said exist, we will have to regulate our treatment accordingly.

The best I can do is to recite you a few cases I have had in my clinical experience:

Case 1. Man, 24 years old. Abscess of upper lateral; healthy condition of patient; abscess would not yield to treatment through root canal; then would not yield to treatment by means of injecting through a fistulous opening; finally it had to be cleaned out surgically; treatments were weeks and weeks apart, giving nature a chance.

Case 2. Young lady, 23 years old. Healthy condition; no systemic disorders; abscess as big as a plum on the palate, caused from upper lateral. This was the second occurrence; had been lanced a year before by a physician. Treatment—Removal of contents of root canal; abscess lanced; dressing put in root canal, and changed in a week; twenty-eight days after, filled.

Case 3. Young girl, 18. Abscess with fistulous opening in upper central, where Logan crown had been put in with gutta percha; fistulous opening had been there two years; patient healthy; injection made through root canal and out fistulous opening; dressing put in canal; crown replaced; cured in two months.

Case 4. Patient 40 years. Abscess, with fistulous opening on lower bicuspid; patient healthy; case of not long duration; filling removed from tooth; canal cleaned and dressed; cured in two weeks.

Case 5. Patient 40 years old. Abscess on upper central; anemic condition; abscess would not yield to treatment through canal; fistulous opening made; canal cleaned and filled, and abscess treated through fistulous opening; cured in one month.

I would like to deal with cases of abscesses where teeth are extracted, but will be unable to on account of the time.

In summing up let me appeal for a treatment from a broad standpoint. Let the diagnosis be thorough from the history, development and condition, bacteriologically and pathologically; let the treatment be according to diagnosis.

PYORRHEA ALVEOLARIS IN ITS SURGICAL ASPECTS.

BY F. L. FOSSUME, NEW YORK.

I use the inadequate term, Pyorrhea Alveolaris, because dental nomenclature has no better name for that pathologic process, where the tissues of the mouth supporting the teeth undergo degeneration and absorption resulting in the loosening of these organs, and the development of peri-dental abscesses.

Before any attempt is made to treat a disease the causes back of it should be studied, and I shall consider the causes of the breakdown of the alveolar tissues so far as to give a clear and correct understanding of what we as dental surgeons are combating when we undertake its treatment and eradication.

In this paper I will endeavor to express my views regarding the etiology of pyorrhea alveolaris, and to outline the diagnosis and surgical treatment. No review will be made of the history of this disease, since it became a distinct branch of dental science, nor will time permit of much discussion of the various theories pertaining to the solution of its etiology.

I believe there are comparatively few men among those who have given this malady serious thought, who believe pyorrhea is of local origin, that is, that the true cause is a local irritation, followed by inflammation and infection.

There are probably still fewer of our profession who have not encountered cases of pyorrhea alveolaris which refused to yield to local treatment, although the treatment was as carefully and conscientiously applied as in cases which were readily cured. But even the successful cases of local treatment require subsequent and constant treatment, because the same pathologic manifestations usually reoccur within a certain period of time, varying with the severity of the etiologic factors.

I have found that the general opinion among dentists is that pyorrhea alveolaris when well advanced is incurable, and this opinion is entitled to earnest consideration. On the other hand, there are some who have given pyorrhea a deep and careful study, who claim, and I agree with them, that it can be cured by the application of radical surgical interference, in conjunction with the eradication of the constitutional derangement predisposing and causing the breakdown of the alveolar tissue.

I have met many men, some of whom were physicians, having bad pyorrhea, who received local treatment without much benefit, and usually lost several teeth by extraction. Some of these patients had the pyorrhea subside of its own accord, knowing no reason, and being unable to explain the change that took place. One physician tells me that during the summer, when he lives much of the time on his country seat, where he works outdoors

and lives the simple life, his mouth and gums are entirely comfortable, but when in town during the busy winter months, especially towards spring, he has been obliged to have treatment for this trouble.

ETIOLOGY.

Many theories have been advanced as to the cause of the breakdown and absorption of the alveolar process and gums around the teeth, and almost all have been found inadequate and untenable when scientifically examined.

A strong ray of light is at present illuminating this subject, and Dr. Talbot is shedding this light.

Dr. Talbot says that pyorrhea alveolaris is the result of auto-intoxication due to want of proper elimination, and his exhaustive microscopic researches on the alveoli of man and animals, as well as his pathological and physiological investigations, tend to prove his contentions, and I believe they are safe and rational conclusions. At any rate, they are the best we have up to the present time. If we in our practical work follow along these lines, we will in time prove or disprove their correctness.

In the higher evolution of man, with changed environment producing conditions which develop changed physical organisms, the teeth and jaws are probably changed and weakened more than any other part of the body. But even now, when the gum tissues are in good health, their resisting power to infection is enormous. This resisting power to local infection is the natural inheritance from times when the teeth and jaws were put to uses and stress requiring great strength. Such stress, when natural and continuous, develops strength in any physical organ.

The great vascularity of these parts is their strength, but also their weakness: by the rich blood supply they restore and rebuild very quickly, but absorption can also take place in the same proportion, and continual low inflammation in the alveolar process due to increased blood pressure results in arteriosclerosis, the surrounding tissue being osseous, breaks down, and the lymphatic system, which is very active, carries on rapid absorption.

The alveolar process is a transitory tissue, and serves no purpose except to support the teeth. When these are gone the processes are absorbed.

Dr. Talbot says: "The alveolar process is an end-organ. The tooth, so far as the process is concerned, is a foreign body. The arteries, capillaries and nerves pass through the bony process and stop. There are other end-organs in the body, chief of which are the kidneys, the eye and the brain. A marked difference exists between the kidney, eye and brain as end-organs and the alveolar process as an end-organ. The difference is the important point in the study of interstitial gingivitis. End-arteries running into the kidney, eye and brain, owing to their

soft nature, give the arterial walls a chance at expansion, permitting in a measure the blood to flow more easily, and prolonging the tendency to disease. On the other hand, blood vessels extending throughout the alveolar process in a tortuous manner cannot expand, as the result of which blood charged with toxins and subject to cardiac vascular changes immediately sets up irritation and inflammation resulting in dilation, bone absorption and arterial degeneration. These changes, therefore, will occur much earlier in the alveolar process than in other end-organs."

Disregarding all forms of systemic disease, such as nephritis, rheumatism, gout, diabetes, etc., in their active manifestations, we will consider the milder forms of constitutional disturbances which represent defective metabolic processes the diagnosis of which is more obscure, especially the explanation of the causes of lowered functional power of the organs. Nervous stress; and shock, change of climate, monotonous sedentary life, together with unwholesome modes of living, may be mentioned as reducing the effective operations of organic functions, which result in faulty metabolism and autointoxication.

A blood smear under the microscope, and the examination of the urine, are methods by which the conditions of the general system may be ascertained.

Dr. Talbot has made extensive examinations along this line on patients having pyorrhea, and I quote his summing up:

"Critical examination of the tables must convince a careful observer that in every examination two conditions are present: First, autointoxication and faulty elimination as represented by the indican; second, kidney overstrain and renal insufficiency. When the liver fails to destroy the poisonous materials, and the bowels to eliminate the toxins, overstrain of the kidneys causes the blood to become overcharged with toxins and acidity, and the heart and arteries undergo degenerative changes. Cardio-vascular disease with insufficient blood supply result."

When any of the organs which contribute to the digestive economy are deranged, as, for instance, the stomach, liver or pancreas, the elements taken in as proteids, carbo-hydrates, and fats, are not converted into chyle in an absorbable form or state, but remain in the intestines and are attacked by the micro-organisms normally present, which organisms proliferate rapidly to cope with the large amount of undigested food, and in their activities produce the products of putrefaction, some of which are always absorbed by the intestines, and entering the circulation, can be found in the urine as indican. A test showing a considerable amount of indican in the urine signifies to a certainty the presence of the indoxyl sulphuric acid group of intestinal intoxicants such as indol, skatol, cresol and paracresol. These are modified, and their toxic effect greatly reduced, by

being carried in the blood to the liver, which is the aseptic protector of the body, and through this hepatic action they appear in the urine as indican. In general all forms of gastro-intestinal disturbances, aside from their physical signs and symptoms almost immediately cast their reflections upon that mirror of the alimentary tract, the mouth.

It has long been taught that the presence of indican denotes the breakdown of living proteid, as in the formation of abscesses, in cancerous growths which are ulcerating, etc.

Those who have studied this subject carefully say that where tissues are breaking down and pus is forming, indican will result. Indican is present in eighty per cent. of abscess cases treated in dispensaries. But examination of the urine after the pus had disappeared has shown indican still present.

The conclusion, therefore, must be that the abscesses resulted from some abnormal condition which produced indican, thus lowering the tissue vitality to a point when the abscesses developed. Cases of abundant pus due to extensive infective wounds did not show indican with any regularity, whereas in carbuncles, or abscesses, which seemed to develop without any exciting cause more potent than the resident bacteria of the skin, indican was present in the above percentage of cases.

Pyorrhea seems to come under the same class, and the indican is found in such cases almost uniformly.

The deduction is that indican is the product of putrefaction in the intestinal canal, due probably to the bacillus coli communis acting on peptones. Whether it is deleterious to the system is not known. Either it is, or the process which produces it is injurious. Blood pressure is raised during marked indicanuria. The first sign of renal failure is the raised blood pressure, due to retained excrementitious matter in the blood. Indicanuria seems to be one of the main causes of chronic interstitial nephritis, in which disease the blood pressure for years is nearly doubled.

Indican is indoxyl potassium sulphate. It is changed into this from indol in the liver, being there combined with the ethereal sulphates.

Some of the things causing indican are:

1. Improper mastication, resulting in gastrics, lessened HCL.
2. Gastritis, lessened HCL. HCL stimulates pancreatic secretions, and in such cases delayed digestion carries the peptones too far down the tract to be absorbed, and the coli-com changes it to indol, skatol, etc.
3. Too much sugar may cause it, due to catarrh following fermentation, and accompanied by much mucus and, therefore, digestion is delayed by: (a) Poor juices; (b) mechanical obstruction caused by presence of too much mucus.
4. Excess proteid with normal digestion, or
5. Normal proteid, normal digestion, but absorption delayed.

6. Lack of bile, favoring putrefaction, as bile is strongly antiseptic.

7. Weak muscular action of intestines.

8. Food rich in indol, etc., etc.

I believe the process which produces the indican does the damage, as many samples of urine show modifications of the indican. Might it not be rational to believe, then, that in the intestinal tract lies the cause of pyorrhea, and that indican is a sign of abnormal intestinal conditions, and that it is useless to try to cure pyorrhea permanently while indican is present.

Dental operations, such as orthodontia, wedging, contour, gold restorations, extensive crown and bridge work should be delayed till the urine is normal, for infection seems easy in cases where indican is present.

The symptoms of intestinal intoxication are commonly summed up in the word biliousness, with its lassitude, headache, irritability, nervous depression, muscular stiffness and soreness, cutaneous affections heavily coated tongue, acid reaction of the fluids of the mouth together with viscosity, foul breath, sordes on the gums and teeth, and pale buccal mucous membrane, a state the patient may be expressing when he says, "I feel wretchedly."

Aside from poisons developed in the intestinal tract by the over-activity of the normal bacteria, abnormally numerous, it should be borne in mind that the intestinal tract is an excretory organ. If part of the dog's intestine, say six inches, is entirely emptied and amputated from the rest of the gut, the ends of which are then united, this short piece not being severed from its mesentery, and its ends closed, will after three days be filled with excretions. The peristaltic movement of some intestines is so weakened that no complete evacuation ever takes place, and in consequence the alimentary lining is coated with slimy mucus forming mechanical obstruction by clogging the delicate vessels and glands so abundantly supplied to this membrane.

Much food is eaten which is contaminated, especially meats and fish.

Chemicals used in the preservation of meats, milks, etc., are deleterious to the health.

The United States Government conducts in connection with the Bureau of Chemistry, under the supervision of Dr. H. W. Wiley, food experiments, and different chemicals used as preservatives have been tested on a number of men with unvarying bad results. These substances have no smell or taste, and the men did not know they were taking them.

In his official report Dr. Wiley sums up as follows: It appears, therefore, that both boric acid and borax, when continuously administered in small doses for a long period, or when given in large quantities for a short period, creates disturbances of the appetite, of digestion, and of the health.

That the gums and other tissues would become affected through a prolonged diet containing such mild poisons there is no doubt, and it would be interesting to make some experiments along this line, or communicate with Dr. Wiley or someone who would do so in conjunction with other investigations.

When the body is in this state of health, and if not changed by a fever or hygienic and medical interference, more serious conditions usually develop, such as gout, rheumatism, arteriosclerosis, nephritis, diabetes, nervous disturbances, etc.

The alveolar tissues are usually affected long before these organic and constitutional maladies appear, and often pyorrhea is well advanced, with loose teeth and absorbed alveolar process.

The nervous equilibrium plays an important part in the functional activity of the vital organs, and this phase of the etiology of faulty metabolism offers a profitable field for study and special investigation.

LOCAL ASPECT AND TREATMENT.

The local operative work of pyorrhea alveolaris requires the highest order of mechanical skill, for the teeth and other parts surrounding them must be so treated as to be entirely free from all foreign deposits, and conditions of an abnormal and pathologic nature.

In this respect the mouth and its tissues do not differ from any other part of the body, and the principles governing asepsis, as applied in general surgery, should be applied to all surgical work on the alveolar tissues. If aseptic precautions are neglected, the best results cannot be expected, aside from the danger of specific infection. A paper on this subject has been prepared for you by Dr. Curtis, of New York.

The local treatment may be broadly divided into two divisions: instrumentation and medication. The first is the technical, surgical operative work, while medication is aimed to render the parts to be operated on aseptic before and during the operations, and to stimulate the formation of new and healthy granulations, and to protect these newly formed tissues from micro-organic destruction.

It might be well to consider the local manifestations, although these are familiar to all of you, but it will help in making the subsequent discussion clear.

The soft tissues are either greatly hypertrophied, dark and red in color, loose and puffy, or they are pale, anemic and tightly drawn around the teeth, and receded from the crown. An instrument can be passed between the tooth and gum, showing that the periodontal attachment is also greatly destroyed. The margin of the periodontal membrane has thus changed, receding irregularly according to the severity and duration of the disease, and the resistance power of the local tissues.

On the teeth and roots are usually found concretions and

deposits. The gray and greenish concretions are always hard, and sometimes very rough, and firmly attached, and often, in multirooted teeth, covering the entire surface of one of the roots. This root should be amputated. Again these deposits are so thin and smooth that they are detected with difficulty. It has been found that in some cases of pyorrhea the concretions are deposited in rings and steps. An explanation of this is as follows: The micro-organisms become sterile, or they are arrested in their activities. The vital resistance of the tissues has increased, and thus overcome them, or that they perish in an excess of their own waste products. A renewed infection then takes place, forming a new ring of deposit.

In the most vicious and aggravated cases of pyorrhea alveolaris no deposits are visible, and they are often discernible only to the most educated finger touch. When such teeth are extracted and their surfaces examined under the microscope deposits of a whitish color will invariably be found close to the edge of the membrane. These deposits are believed to be bacterial deposits. The apex of the tooth may be so covered, and the only membranous attachment is on one side of the tooth.

Teeth affected with pyorrhea are usually vital teeth, free from active decay, hard and dense, invariably showing evidences of hypercalcification. Possibly from prolonged external irritation of the dental fibres, running through the canaliculi, the functional activity of the pulp has been over-stimulated, and the odontoblasts have overdone their work.

The root, or part of it, often has a translucent appearance. It is not known whether or not this hardening interferes with the physiology of the periodontal membrane.

These tissues are also disturbed and irritated by imperfect crown and bridge work, fillings with rough and protruding margins, improper knuckling of the teeth, plates carrying artificial teeth, ruthless use of wedges and clamps, etc.

Understanding the anatomy and physiology of these parts, the technique of removing and destroying all elements producing inflammation and infection becomes simpler, and the results more certain, and the possibility of doing mechanical damage to the parts operated upon quite remote.

I am to operate before you at two clinics, and I will then demonstrate in detail my technique, and show you a few instruments which I have designed, and which have cutting and planing edges somewhat different from other instruments now in use.

Before operating I sometimes use the following local anesthetic, which I have found valuable when there is considerable sensitiveness of the gingival tissues. When freshly put up it is efficient and harmless. It should be used hypodermically with fine needle.

R Beta Eucain..... $\overline{5}$ ss.
 Sodii ChlordiGrs. x.
 Liqour PhenolCtts. x.
 Extract Hammilis $\overline{3}$ ii.
 Aqua q.s.'add $\overline{3}$ iv.
 S. as directed.

In the local diagnosis of pyorrhea, discrimination must be exercised, and a careful examination of the teeth will usually reveal alveolar abscesses, suppurating pulps, elongation of the teeth producing abnormal occlusion, exfoliated roots and hyper-sensitive pulps, often inflamed to the point of strangulation.

The X-ray is of great value in such examinations.

Among the agents that I especially like in the medication of the tissues I wish to mention only a few, because when instrumentation is thorough most of the germicides in use will prove quite adequate. This prescription is potent and pleasant as a general mouth wash and as a massage lotion:

R MentholGrs. vi.
 Thymol.....Grs. v.
 Oleii Ment. æ piperitæ $\overline{3}$ i.
 Formalin (Schering) $\overline{3}$ i.
 Glycerinum $\overline{3}$ i.
 Spiritus Rectificatus..... $\overline{3}$ iiss
 Sodii Bicarbonatic 5% sol. q.s. ad. $\overline{3}$ vi.

Permanganate of potassium is a most effective remedy in that it is a powerful germicide, as well as an antibromic and a mild, painless caustic. This is of great value, as it destroys the false membrane, which has dipped from the mucous lining of the mouth into the pocket or space formed between the roots and gum tissues. This false membrane should be scraped or burned away, as it is always exuding or weeping, and prevents firm and tight closing of the gum around the root.

In pus pockets, after scaling and aseptic irrigation, I use a 15 per cent. solution of colargolum or argyrol, both being metallic albumenates of silver and specifics against pus, and tincture of iodine and tincture of aconite as counter-irritants and stimulants of granulations and lymphatic activity.

Hydrogen dioxide, borine, glyco-thymoline, etc., are used with good results as mouth washes, and lactic acid, sulphuric acid, trichloreseatic acid, chloride of zinc, etc., are used as caustics, solvents, and stimulants.

As an aid in overcoming the adhesion of hard deposits to the root surface, I use a 10 per cent. solution of zinc iodide.

To sum up, the local treatment is nothing more or less than thorough antiseptic and aseptic interference, and to bring this about it is necessary to curette, scale, and polish these parts, and apply germicides in such a manner as to eradicate all infection and infectious matter. At the clinics I will show you my instruments for applying massage in pyorrhea. This is vibratory massage, together with aseptic inunction. By this aid I have

been able to quickly eradicate infection from the gums and render them hard and firm.

Whether the local treatment of pyorrhea is of as much importance, from certain viewpoints, as some claim or not, matters very little. From the viewpoint of cleanliness and hygiene, prophylaxis of the oral cavity is of fundamental importance.

The tooth brush is a modest agent, but also a powerful one, and may be used with greatest efficiency when properly applied. At the clinic I will demonstrate how it should be used. Not one patient in a thousand knows how, and some seem unable to learn. I will also demonstrate how finger massage should be applied to local parts in the mouth.

Prophylaxis treatment, as applied in general practice, I believe, is responsible for much periodontal infection, and subsequent pyorrheal conditions. Asepsis is not carried out, and all deposits are not removed. The continuity of the protective gingival tissue is broken by wounding, and the infectious matter is stirred up rather than removed. This infection and irritation bring about the inflammation which we are trying to avoid.

Ideal prophylaxis is to render the parts absolutely clean, and to take such antiseptic precaution as to prevent all infection.

Pyorrhea, with its daily and continuous flow of pus through the alimentary canal, invariably means derangement of the functions of the stomach, liver and intestines, besides a continual absorption of toxins. I know of cases where this poisoning has been so severe as to produce pernicious anemia. Thus it is seen that the system has to cope with many poisons, namely, pus exudations from pyogenic pockets in the mouth, toxins resulting from the over-activity of micro-organisms, especially in the intestinal tract, from retention of by-products produced in the process of cell metabolism, from tainted meats and sea foods, and from chemicals in adulterated foods.

Pyorrhea is so prevalent to-day that I invariably find that the most important thing to attend to for new patients, past twenty-five years of age, is to eradicate effete matter accumulated under the gum margins, and to improve the circulation of these parts.

Having given many clinics, and had opportunity to examine the mouths of confreres, I have found that a very large percentage had pyorrhea. I do not believe it can be gainsaid that this malady causes the loss of more teeth, is more baneful to the general health, and causes more discomfort and suffering than any other pathologic process occurring in the oral cavity. In view of this fact, surgeons should give as much care to making the mouth as clean before surgical operations and during convalescence as is given to sweetening up the gastro-intestinal tract. Except in emergency cases, every patient anticipating surgical interference and anesthesia should have their mouths and teeth put in healthy condition. This supplies to the protection of the system from

toxic effects due to unclean mouths, as well as to the protection of the dental organs from destructive influences, to which they are very susceptible during a period of physical depression.

CONSTITUTIONAL TREATMENT.

The constitutional treatment consists in the removal of the effete products from the intestinal tract, a change and regulation of the diet and of habits, as well as rules of exercise and hygiene to be observed; the nervous system of those who are sluggish must be normally stimulated, thus spurring on the flagging vitality. Therapeutic measures such as may be necessary to make each organ act normally ought to be prescribed.

Every surgeon of to-day before subjecting a patient to any serious surgical operation has the patient's intestinal tract thoroughly cleansed by catharsis and enemata, etc., and if pyorrhea exists, I say, have it cured, too, otherwise the preparation in advance of operation is but half done and results of a brilliant operation may be dimmed by slow convalescence caused entirely by toxic absorption from pus.

The surgical work performed on the alveolar tissues does not compare with the surgery of the major kind in its effect on the constitution, but considering the etiology and the difficulty of attaining successful and permanent physiological results, the utmost care should be exercised in carrying out in detail every precaution and utilizing every aid in overcoming this diseased state of the alveolar tissues.

In the carrying out of the constitutional treatment the assistance of a medical specialist, or at least the family physician, is necessary to attain the best results as they make more of a special study of this branch of the work, and are always ready to co-operate and assist. To him should be left the urine analysis and all corrective procedure.

The food problem in this connection is one of the greatest importance, both as to what to eat and the amount of it, in order to bring about a proper balance in nutrition. The proteids, whose main purpose is to furnish the elements of nutrition to the protoplasmic cell, may be divided into nitrates for muscular and phosphates for nerve and brain tissue. The carbo-hydrates and fats are consumed by oxidation, giving energy and heat. Some waste matter is necessary to give bulk and to mechanically cleanse or scrub the lining of the digestive apparatus.

To consider the food problem in detail is entirely outside this paper, but I recommend those who wish to study this subject to obtain a copy of Prof. Chittendens' book, "Physiological Economy in Nutrition," in which he admonishes the necessity of intelligently regulating the diet. He instituted dietic experiments carried on with great care upon groups of men of different vocation. The proteid foods of these men were reduced about

one-half of the usual amount consumed, and the carbohydrates 25 per cent., and all improved in health, with greater capacity for work and greater resistance to fatigue. The athletes in training gained muscular power and endurance, and boils and indigestion so common in athletic training were unknown.

In closing, I wish to make a suggestion and a plea. Let every dentist make tabulated records of every case of pyorrhea treated, and preserve these for future analysis and reference. By this method many interesting and valuable facts regarding treatment and results will be attained, as well as a more careful and scientific procedure in the handling of this disease.

DISCUSSION.

DR. JAS. M. MAGEE.—I must confess to a feeling of disappointment in the paper, since the title led me to expect a detailed description of some surgical procedure, but there is nothing of that nature given us, though the author says he will pay special attention to the two factors, instrumentation and medication.

What I do not know about the disease most commonly known as pyorrhea alveolaris would fill a good many chapters, and what I do know would fill a very short one.

The disease in New Brunswick must differ from that prevalent in many other places, because cures are made right and left, and there is no such thing as failure, if one believes all he reads in the dental journals.

The discussion of the subject matter of the paper necessarily begins at the beginning of the cause of the disease. Dr. Talbot, with whom it was my pleasure to room during the convention of the Fourth International Dental Congress at St. Louis, calls the disease interstitial gingivitis, and states positively that immediately the alveolar process reaches its full development it begins a retrograde metamorphosis. I am not qualified to discuss that question on its merits; nevertheless his reasonings must be given the greatest respect.

Faulty metabolism is the beginning of pyorrhea alveolaris, and those two words cover more ground than any other phrase describing a condition of the human system. It embraces the whole mystery of waste and repair, and has a string, so to speak, attached to every gland, whether secretory or excretory, in any way connected with or related to the alimentary tract. It embraces autointoxication, low vitality, malnutrition, and all the others. It also embraces mastication.

If, for the sake of argument, we agree that the entire condition of the mouth was due to faulty metabolism, the reasoning ought to be: get the digestive organs in proper condition, and the mouth trouble will correct itself. This, we know, cannot follow when there are pus pockets around and deposits of calculus upon the roots of the teeth. If, however, we can remove *all* of

the calculus and cut away the loose gum tissue so that the bottoms of the pockets may be easily syringed out, it ought to be possible to keep the gums in good condition with little more than ordinary brushing of the teeth. It *ought* to be, but alas! it is not, unless the patient makes a revolution in the dietary line. He must discriminate and take care that foods which are hard to digest are tabooed for a time, and also see that every mouthful of solid food is properly chewed and insalivated.

Dr. Fossume has very properly said: "The food problem is the most important, both as to what we eat and the amount of it." Let me also add, "And how we eat it." The mouth may always be depended upon as an index of health, and his statement that "all the various gastro-intestinal disturbances find their reflection in the mouth" is beyond question. I cannot too earnestly commend to the members of the medical fraternity the advisability of paying more attention to the mouth as a source of diagnosis. (To make a slight digression, let me reiterate a remark expressed in a former paper. Michaels, of Paris, claims that he can, from an examination of specimens of the blood, urine, and saliva, absolutely diagnose any disease without even seeing the patient.)

We cannot get away from the mouth when disturbances of the alimentary tract are present, for usually these disturbances are a result of improper mastication and insalivation.

If we thoroughly triturate our food (and, of course, if that is done, it will be thoroughly insalivated), even if it is not scientifically balanced for nitrates, carbohydrates or any other -ates, the digestive organs will soon assume their proper tone, and will, unless diseased, remain so until again abused by overwork.

One of the causes of loss of the teeth is insufficient use of the teeth in the preparation of food for digestion. Nature always endeavors to rid herself of useless appendages, so, finding that the teeth are not fulfilling their function, she says: "Get thee hence!"

In my experience there seems to be two different classes of cases, one class comprising those with pale, thin gums, which seem to have no alveolar process under them, and which do not exhibit any flow of pus, and another which includes all pus pocket cases.

I confess to a feeling of helplessness when a case of the first-named appears, and I am thankful to say they are few and far between. Though, after twenty-three years' struggling, I have cases so much improved that the teeth do not seem a bit worse as the years go on, I cannot truthfully say I can cure the disease.

Those who know me best will give me credit for aiming at thoroughness. I believe I have used most of the scalers devised for the removal of the calculus, and tried most of the medicinal applications suggested, yet I have failed to effect what I call cures in a large proportion of cases. In the case of a molar

which has been girdled—that is, where the disease has progressed, to the destruction of the alveolus all round the tooth and exposing the bifurcation to an exploring instrument, I have yet to see a cure. By cure I mean a condition of health which can be sustained indefinitely by the exercise of ordinary hygienic measures.

Teeth which have to be splinted are, except for appearance, of doubtful utility.

The author speaks of amputating roots of molars which have become exposed to their apices. Knowing the full function of a molar, I contend that, except for appearance, any molar which has become so far diseased as to require amputation of one of its roots had better be extracted. I have tried the experiment, and have seen the condition after treatment at the hands of other (and skilful) operators, yet I am constrained to make this statement.

I know I can make a gold filling to stop a carious cavity, which will save the tooth in which it is anchored from caries during the lifetime of its owner, but I do not know for certain that I have overcome all the conditions responsible for pyorrhea alveolaris, and so I declare we cannot positively cure the disease. At best we can only promise mitigation.

I cannot agree with the statement that dental pulps have no value after middle life. If nature had no good use for the dental pulp after that period its destruction or elimination would have been provided for. The statement seems to be on a par with that made by the surgery fiends, that the vermiform appendix should be removed, whether actively offensive or not. "It is of no use, it never was of any use, and it never will be. As you may some day have appendicitis, let's take it out."

In a nutshell, the cure of pyorrhea alveolaris, if cure there be, can only be effected by thorough surgical treatment of the affected sockets, followed by local medication, and accompanied by attention to hygiene, food supply, and proper physical exercise, preferably in the open air.

Owing to the peculiar condition of the mouth in being constantly flooded with saliva, no great degree of asepsis is possible, except for a limited time, and in a circumscribed area; nevertheless extreme cleanliness counts for very much during the continuance of the treatment.

Of all the medicinal applications I have yet tried for dressing the curetted pockets, lactic acid has proved the most efficacious.

After the gums have recovered from the extreme soreness consequent on the surgical work, massage should be resorted to as a stimulus to a healthy condition. I do not think any instrument can ever be devised which can compare with the fingers and thumb. Grasping the gum on either side of the alveolar ridge, and holding as tightly as desired, draw the finger and thumb down (or up) over the crown of the tooth, repeating as often as necessary.

FRIDAY.

Dr. Louis Lemieux called the meeting to order at 2.30 p.m., with the following remarks:

I have been requested by the President to open up this meeting to continue the discussion on Dr. Fossume's paper. The Executive is sitting just now, and if there are any gentlemen who have any observations to give on this paper before Dr. Fossume answers the criticisms of yesterday, we shall continue the discussion which adjourned on that subject. If there are any gentlemen present who have any observations to give, kindly do so now.

DR. HARWOOD.—Mr. Chairman and Gentlemen: I am sorry I was not here yesterday to hear the discussion on Dr. Fossume's paper, but I have been the fortunate patient of that gentleman. When I first saw the instruments a funny feeling came over me, but after a little while of Dr. Fossume's treating me, I cannot say enough in favor of his instrumentation, and I assure you, gentlemen, that I am not very brave, and Dr. Fossume did not hurt me in the least. Of course, there was a certain irritation of the gum, anyone would stand that, and I am sure there are many here now who would have been very glad to be in the chair when I was.

DR. WEBSTER.—Mr. President and Gentlemen: I heard Dr. Fossume's paper, and had the pleasure of reading it, and I thought his paper was quite a satisfactory one for this meeting. The original draft which I read did not go into the detail of his paper. His paper was full, pleasing, and quite up to the average standard of this character. (Applause.) It was very nicely presented, and altogether quite a creditable paper to present before the Canadian Dental Association, which demands a very high standard. (Applause.) There was a question which I would like to ask. It has troubled me quite a good deal. I had a patient with pyorrhea, and I would like to know just how you overcome the sensitiveness of the teeth and leave the pulps alive. You could fix a dam, but I do not think that would be effective. I would like to know just how you overcome that condition of sensitiveness.

DR. ABBOTT.—I probably ought to apologize for rising at all, and perhaps I am asking a question that was covered by the paper; if I do, I hope you will excuse me. I would like to know how you treat those cases which are very much inflamed, a great deal of pus, and still are so sensitive that you can hardly touch them, and you want to get immediate relief? If the paper has covered that, I would not ask the doctor to take up any more time, but, if not, kindly explain to the meeting how he overcomes that particular form of the disease. I watched his clinic, and if I get no other benefit from the convention, I feel that I have learned to brush my own teeth. I thought I knew before, but after watching Dr.

Fossume's demonstration, I found that I was a very infant at the business.

DR. DUBEAU.—Any one else wish to say anything? I will then ask Dr. Fossume to continue his remarks.

DR. FOSSUME.—Mr. Chairman and Gentlemen: I thank you for the encouragement you have given me this afternoon. It is indeed most gratifying, especially as I was unable to devote the time to prepare this paper that the subject deserves. I feel that I have appeared before a body of scientific men, who have shown genuine and true interest in a scientific statement of the causes that lead up to the pathological conditions of the mouth, and I also feel that my coming up here and giving you the few ideas that I possess will bear considerable fruit. I am sure that the members of this Association will treat pyorrhea alveolaris in a more thorough, comprehensive and intelligent manner than the average men in the United States and Canada are doing to-day. I believe that this subject of pyorrhea alveolaris is somewhat obscure, and that the treatment of it is, to the average practitioner, irksome and difficult. Much of that difficulty is due to the lack of appreciation by the patient, and for that reason we must fortify ourselves with convincing arguments which may be brought to bear upon our patients that they may realize the importance of keeping the mouth—that is, the organs in the mouth, the gums, the teeth and the tongue in such a condition that serious pathological changes will not occur, and that they may be made properly to value our efforts in their behalf. Pyrrhea alveolaris comes on during the time when the life of the individual is on the decline, when a relatively weakened physical condition presents less resistance to infection from septic matter ever present in the mouth; when the process of repair is no longer as active as in youths or middle life and the patients need of the organs of the mouth is greater than at any other period, and I am sure, gentlemen, that if we in our every-day work emphasize these facts to those of our patients who have a tendency to this disease, you will find them indeed grateful to us, and very glad to submit to the treatment that we suggest.

In closing the discussion, there are a few points that I wish to discuss. The first speaker of last night, Dr. Magee, asserted that massage of the gums with the fingers is quite efficient, and all that is required, and that the patients can do this for themselves. The purpose of vibratory massage, which is instituted to reach the deeper parts, could not have been understood by the gentleman. In the soft tissues of the body this is accomplished by the contraction of the muscular tissues. This is not so in the gums, and massage that can be felt several inches away from the spot where it is applied is the only form of massage that will truly overcome that condition of these tissues which tends towards the destruction of the alveolar process. There is no doubt that as an

adjunct to this massage careful instructions to the patient on how to apply massage with the fingers is also very helpful, but it will not take the place of the massage applied with the instrument. Regarding Dr. Magee's statement that the loss of the pericemental attachment of one of the roots of a multirrooted tooth is sufficient reason for its extraction, I would say that I believe most of us will not extract, but amputate such affected root or roots, especially buccal roots of the superior molars, and a tooth so treated is as firm and as beautiful after the root has been amputated and carefully finished off as it was before. The patient may chew on it with considerable force, and facial contour is maintained.

I cannot agree with the statement made by the second speaker, in which he says that the alimentary canal has no function of an excretory nature. The lower part of the intestinal tract is the greatest excretory organ that the body has.

I consider that pyorrhea is rarely to be found in a person of good health.

DR. WEBSTER.—What is the matter with me, and I have pyorrhea? A boy applied to us at the Dental College about four years ago; he had lost his teeth as rapidly as he got them, and also the alveolar process. At the age of fourteen, when we saw him, he had three of his second molars *lying down sideways*, one of the permanent cuspids remaining, and all the other teeth lost. These had simply gone as those of a man of 60, the alveolar process being entirely absorbed. This boy was a messenger, rode his bicycle around town, was a robust lad, and had no appearance of the existing condition.

DR. FOSSUM.—A very strange case presented itself to me some years ago, in a little girl, eleven years of age, with pyorrhea well developed around the lower incisors. I was very much surprised at such a condition. She looked the picture of health, had a fine crop of hair and a good complexion. I sent her to a physician to be examined. The physician reported that she was not in perfect health, but was suffering from diabetes.

There is no doubt that pyorrhea alveolaris is very obscure in its pathology; but I am still unconvinced that pyorrhea can develop in a perfectly healthy person. I believe that, though we may be unable to locate it, there must be some disturbing constitutional factor. Now, even in the case of Dr. Webster, apparently in perfect health, who has pyorrhea developing, I should expect, and I would almost stake my professional reputation on it, that there is a disturbance of the physiological equilibrium somewhere, a tendency to breakdown of some of the tissues of the body. However that may be, we all know that the local resistance to pathological changes differs in different individuals.

Now, inasmuch as I was giving two clinical demonstrations, I did not feel that it was necessary for me to go into a detailed

description of instrumentation and of the remedies that we might use in this connection, because that would have made the paper entirely too long. Besides, to describe technique in a paper is not very interesting. I did not think it was necessary to go into it as Dr. Pearson has apparently wanted me to do. Regarding instruments, one set of scalers will work very well in one man's hands, while another man cannot get along with them at all. So we cannot take one set of instruments and say they are the best. The personal equation enters here.

Dr. Abbott asked me how to overcome sensitiveness of the cementum; that is a very difficult thing. The only way that I have been able to overcome sensitiveness around the necks of the teeth is to apply the rubber dam, wash with bicarbonate of soda, dry and rub the surface with a 40 per cent. solution of formaldehyde. The late Dr. Hart of San Francisco read a paper before the Central Dental Association of Northern New Jersey covering the question of how to overcome tooth decay and how to sterilize the enamel. Dr. Hart in that paper explained how, after applying the rubber dam, to use an orangewood stick, powdered pumice and pure formaline, and polish the surfaces. I have tried it for years with success. I believe, gentlemen, that if we take children's teeth when they are white and chalky, sensitive possibly, even though there may not be any active decay, slip on the rubber dam and attend to them in this manner, mix a little cement and force it into the fissures, and then burnish with melted paraffine, we will find that such teeth will not decay.

DR. BAZIN.—How are we to apply the rubber dam beyond the line of deposit without considerable pain in cases when the teeth are covered with tartar?

DR. FOSSUME—I have not found them so very sensitive where there has been tartar; it is usually below or above the tartar that the sensitiveness is found. The teeth are difficult to keep clean, and being so sensitive, the patient refrains from brushing them. In case of pyorrhea in an acute stage, where the gums are swollen and there are occasional abscesses which give pain, as in the case Dr. Abbott describes, the first thing to do is to syringe the mouth carefully between the teeth with warm water and an aseptic solution; the next thing is to take a very fine file and pass it in, apply the massage instrument over the affected area, working with great gentleness and care; and when the pus is evacuated, take a solution of cocaine in heated glycerine. The solution will be almost syrupy. By applying this with a little twist of cotton into those pockets and gently massaging the gums around the teeth with the glycerine-cocaine solution, keeping it as dry as possible, almost all pain will subside. This treatment does not take so very long, and I am positive that we can stop the pain in almost every case of acute pyorrhea. Then carefully scrape affected parts of the teeth with delicate instru-

ments, so as not to effect any further inflammation. I am positive that if we would take the trouble to demonstrate to our patients how to brush the tongue and teeth, they would be very grateful to us.

I feel justified in making the following suggestion, gentlemen, because I feel that I am striking a responsive chord when I ask you to take up the study of pyorrhea alveolaris and its etiology in a scientific manner. I am positive that there are gentlemen here to-day, and members of the Dominion Dental Association, who will be glad to form a club for the purpose and to keep records of their cases. There is no doubt that the profession has advanced in the last few years with leaps and bounds in mechanical skill and that its standards are very high. Still, there are conditions that need improvement, and where it most needed is, in my judgment, a scientific study of the underlying causes that lead to destruction of the tissues that support the teeth.

There are men who realize this and are doing great work in this direction. Their names are familiar to all of us, but their number is comparatively small. We can all do our share, and the share of the least of us, if done in earnestness, may bear fruit beyond expectation. In dentistry there is no more fascinating field for those of enquiring mind, and none of greater usefulness to humanity. There have been clubs established in the Northwest of the United States which have highly developed the mechanical, microscopical and anatomical features of the filling of teeth.

The men who have studied along these lines and given the subject much attention I am sure would be willing to give a series of lectures to those who are desirous of taking it up in earnest. I sincerely trust that this suggestion will be considered and accepted.

Dominion Dental Journal

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VOL. XIX

TORONTO, MAY, 1907.

No. 5.

SHALL THE SCHOOL OF DENTISTRY BECOME A FACULTY OF THE UNIVERSITY OF TORONTO.

During the past few years, and especially since the reorganization of the University of Toronto, there has been a growing feeling that the School of Dentistry might become a faculty of the University with advantage to the University and the profession of dentistry alike. The duty of a university is to teach, and the duty of a dental board is to protect the public from incompetent practitioners. If a teaching body should fail to give such instruction as is demanded for the protection of the public, then the board might step in and give the instruction. There is no likelihood of the University failing to maintain a suitable standard, and if the board were freed from the management of a school, all of their attention could be given to their duties to the public. In view of the possibility of the University

taking over the teaching of dentistry, and the necessity at the present time for increased accommodation in the Dental School and the desire of the hospital trust to purchase the present school building, the Board of Directors at its last meeting passed the following resolutions:

1. That in relation to the offer of the National Trust Company to purchase the real estate of the R. C. D. S., on behalf of the Hospital Trust, we notify the Trust Company that we will avail ourselves of the offer contained in the letter of Mr. Home Smith, of April, 1907, to defer final answer until January 1st, 1908.

2. That the offer of the Hospital Trust to purchase the property of the R. C. D. S. presents a very convenient and suitable opportunity to this Board of serious consideration for the future of dental education in Ontario and the best means of securing the best results.

3. That for such consideration it is advisable that a committee of three be appointed to enquire—

(a) As to the expediency of asking the University of Toronto to institute a faculty of Dentistry in the same relation to the University as the faculties of Medicine and Applied Science.

(b) As to the practicability of making such an arrangement, the University taking over the School of Dentistry as a going institution and providing for it suitable buildings and equipment.

(c) In case such an arrangement be made, the Board of Directors of the R. C. D. S. to take the same relation to the profession of dentistry as the Council of the College of Physicians and Surgeons of Ontario bears to the profession of medicine.

(d) To ascertain, proximately, at what cost a suitable site could be procured and proximately the cost of erecting a substantial building with a foundation area of say 9,000 feet.

(e) In reaching a decision on the subject of paragraph (a), to secure an interview with the Premier and Minister of Education to ascertain the views of the Government on the subject, and, if favorable, secure their approval of such amendments to the Act respecting Dentistry as may be necessary.

(f) To obtain by a vote by mail the opinion of the licentiates not in arrears of the annual fee, on the desirability of entering upon the negotiations named in paragraph (c).

(g) If a vote should be favorable, the committee to endeavor to obtain an appointment with the President, Chancellor, Chairman or Vice-Chairman of the Board of Governors of the University for a free and informal conference on the subject.

(h) In the meantime enquiry specified in paragraph (a) to be prosecuted.

(i) That at this stage a special meeting of the Board be called, at which the report of the committee be considered and acted upon.

(4) That in opinion of this Board, if the Board cease to conduct a Dental School, the funds received from the sale of property shall be considered as a trust fund, and shall be invested, the income derived from it shall be used for the benefit of dentistry in such directions as original research, testing of pharmaceutical preparations offered the profession, testing of mechanical or other appliances and the testing of new processes, and publishing the result of such tests for the information of the licentiates.

SOMETHING DOING.

At the recent meeting of the Board of Directors of the R. C. D. S. steps were taken to correct some of the evils which have crept into the profession during the past few years. By-laws were passed, which may lead to the cancellation of a licentiate's certificate for the following offences:

(a) Committing such acts in the practice of his profession which have been proven to be fraudulent in a competent court.

(b) Employing an unlicensed person to perform operations for patients.

(c) For practising under an assumed name or the name of a person who has not a license.

SUIT FOR DAMAGES IN HAMILTON, ONT.

A dental establishment in Hamilton advertises that it will extract teeth without pain. A man who believed what the advertisement said put the truth of the statement to test, and found that he was badly hurt, and at the end of it had to go to a dentist to have his tooth extracted. He now brings suit against Mr. Henry and Drs. Caverhill and Kinsman for \$200 damages. Let every honest person hope that he may recover the damages, and advise every other person so deceived to take action. Such lying advertisements should be stopped. It is the duty of the Board to prohibit such deception of the public, and not leave it to unsupported victims to punish the wrongdoers.

LAVAL UNIVERSITY SCHOOL OF DENTAL SURGERY. MONTREAL, CANADA, EXAMINATIONS.

The third annual session of the Faculty of Dentistry of Laval University has just ended, and the result of the examinations has been as follows:

Nine candidates presented themselves for the degree of

D. D. S., and all have been successful, as follows, by order of merit, viz.: Geo. A. Belanger, Montreal; Philippe Hamel, Quebec; C. Schaefer, M.D., Paris; N. Boyadjieff, Bulgaria; A. Lacroix, Quebec; Henry Schavoir, Germany; Fortune Smadja, Algeria; Edgar Desjardins, Levis, P.Q.; Thomas Cabana, Sherbrooke.

The gold medal was awarded to Geo. A. Belanger, and the Anatomy Dental prize, given by Dr. Gendreau, to Philippe Hamel.

THIRD YEAR.

Pathology—Passed—A. L. Larose, P. A. Fortier, E. Rouleau, A. Dery, A. Santoire, C. Trudeau.

Bacteriology—Passed—A. L. Larose, P. A. Fortier, E. Rouleau, A. Dery, A. Santoire.

Surgery—Passed—A. L. Larose, P. A. Fortier, A. Dery, E. Rouleau, C. Trudeau.

Metallurgy—Passed—E. Rouleau, A. Santoire, P. A. Fortier, A. Dery, A. L. Larose, C. Trudeau.

Materia Medica—Passed—A. L. Larose, P. A. Fortier, C. Trudeau, A. Santoire.

Prothesis—Passed—E. Rouleau, A. L. Larose, A. Santoire, A. Dery, A. P. Fortier, C. Trudeau.

Anesthesia—Passed—P. A. Fortier, A. Dery, A. Santoire, E. Rouleau, C. Trudeau, A. L. Larose.

Operative Dentistry—Passed—A. L. Larose, A. Santoire, P. A. Fortier, C. Trudeau, A. Dery.

Orthodontia—Passed—A. L. Larose, A. Dery, P. A. Fortier, A. Santoire, C. Trudeau.

Crown and Bridgework—Passed—P. A. Fortier, A. L. Larose, A. Dery, A. Santoire.

Dental Jurisprudence—Passed—A. L. Larose, P. A. Fortier, C. Trudeau, A. Dery, A. Santoire, A. Rouleau.

SECOND YEAR.

Dental Anatomy—Passed—J. C. Gendreau, M. Masson, S. Allard, E. Cote, A. Santoire, J. L. Audet, E. Lapointe, E. Buisson, H. Laurin.

Dental Technique—Passed—S. Allard, J. C. Gendreau, E. Cote, E. Seers, A. Santoire, C. Trudeau, E. Lapointe, H. Laurin, E. Buisson, H. Robert, J. L. Audet, M. Masson.

FIRST YEAR.

Histology—Passed—A. Landry, C. A. Trudeau, C. Lamothe, W. Rochette, H. Charland, A. Dery.

Dental Technique—Passed—A. Landry, W. Rochette, H. Charland, G. Blondin, R. Bellemare, C. A. Trudeau, A. Dery, C. Lamothe.

Dental Anatomy—Passed—C. A. Trudeau, A. Landry, W.

Rochette, A. Dery, G. Blondin, C. Lamothe, R. Bellemare, H. Charland.

Thirty-three students have attended the lectures at the school this year, and the prospects are for a larger attendance at next session.

The new infirmary will be opened in June with a new equipment.

STANDING OF CANDIDATES AT FINAL EXAMINATIONS OF R.C.D.S., TORONTO.

SENIOR YEAR.

The following have passed the Senior year and are admitted to the degree of Licentiate of Dental Surgeons:—R. M. Chambers, W. A. Black, B.A., E. F. Riddon, A. E. Proctor, J. A. Drummond, B. E. Brownlee, H. F. Goodfellow, A. W. Muir, R. J. Mumford, R. M. Graham, A. W. Lindsay, W. B. Steed, K. E. Halnan, L. A. Maxwell, W. J. Sanders, G. N. Howden, J. C. Crawford, V. C. Marshall, E. A. Dolson, A. H. Hartel, F. J. McMahon, D. H. Dow, J. T. Grassie, F. E. War-riner.

To take further examinations:—E. S. Ball, complete practical work and make up average. C. D. Bricker: Practical Chemistry paper and Physiology and make up average. W. B. Daynard: Make up average. F. F. McIntyre: Theoretical Chemistry Surgery; Physiology and make up average.

JUNIOR YEAR.

The following passed the Junior year:—L. I. Mills, C. R. Brooks, Chas. Little, Jos. Stewart, H. G. Wilkinson, B. F. O. Nott, A. L. Johnson, W. A. Dalrymple, T. D. Higginson, W. D. Ramore, M. R. Billings, A. G. McKenzie, J. G. O'Neill, F. Pollock, W. L. Chalmers, J. F. Blair, S. Clappison, R. Hamilton, G. H. McKeown, W. W. Reid, D. W. Duffin, W. A. Mathieson, J. W. Grainger, J. A. Bleakley, H. L. Cheney, C. C. Maclachlan, J. E. Thompson, L. Bancroft, H. W. Morrow, W. B. Wurtz, E. B. Rickard, G. J. Steel, J. G. Roberts.

To take a further examination.—Chemistry: L. Bannerman. Final Physiology: L. Bannerman, L. Vosper. Orthodontia: W. H. McGuirl

SOPHOMORE YEAR.

The following passed the Sophomore year:—F. Barron, Chas. Bouck, G. F. Brebber, H. J. MacLaurin, D. C. Locke, R. M. McLean, W. J. Armstrong, R. E. Stewart, A. H. Pratt, M. J. Gibson, V. E. Hart, W. A. Cowan, N. Simpson. F. Gower, W. H. Coon, R. J. Vance, C. W. Waldron, F. N. Guy, E. L. Thompson, E. C. Veitch, C. V. Wallace, G. T. Ives, R. S. Woolatt, R. H. Cosgrove, W. P. Powers, R. E. Fisher, S. R.

Moore, F. A. Blatchford, R. D. Sloane, J. E. Amos, W. J. Preston, R. W. Frank, W. A. Armstrong, W. W. Mills, C. S. McComb, W. R. Marshall, H. McL. Peaker, H. E. Klingner, C. H. Moore, R. R. Walker, K. McL. McVey, J. A. McArthur, J. Dunning, M. J. O'Callaghan, G. E. French, F. H. Moore, E. Sisson, R. Emerson, J. L. Kappelle, J. M. Cation, E. A. Clark, J. J. Lonergan, H. A. Robb, E. H. Robinson, A. S. Mark, J. A. Ross, H. A. Semple, R. M. McFarlane, W. Sleeth.

To take a further examination.—Anatomy: B. J. Patterson, J. S. Strachan, I. J. Wigle. Physiology: E. L. Cox, I. J. Wigle. Operative Dentistry: E. L. Cox, G. A. Elliott, T. H. Graham, W. T. Irwin, F. S. Loucks, R. M. McIntosh, J. S. Strachan, I. J. Wigle. Prosthetic Dentistry: W. T. Irwin. S. H. Hutt was ill and did not write.

FRESHMAN YEAR.

The following passed the Freshman year:—G. J. Hope, C. B. Johnson, C. H. Weicker, J. B. Carmichael, C. Eastwood, H. M. Richardson, W. R. Somerville, T. W. Dawson, O. Elliott, J. C. King, J. Durran, J. M. Hughton, A. C. Kerr, G. B. Hardy, O. L. Weaver, T. W. Bleakley, D. M. Bouck, A. Rea, W. R. Rodger, L. L. Matchett, D. C. Casselman, N. C. Carmichael, A. L. Church, F. L. Bass, C. A. McBride, A. E. Slack, C. E. Williams, J. S. McDougall, S. Lederman, E. L. Young, W. E. Bruce, F. G. Law, J. A. McTaggart, M. S. Laidlaw, H. J. McDonald, R. H. Browne, M. L. Moore, A. Phillips, R. J. Yeo, P. J. Healy.

To take a further examination.—Anatomy: H. H. Armstrong. Histology: H. H. Armstrong, C. W. Brown, T. C. DeMille, H. S. Macartney, E. W. Mounteer, A. C. McKenna, K. D. McKenzie, C. Nicholson, D. P. Sutton. Physics: H. H. Armstrong, L. G. Bickerton, T. C. DeMille, E. J. Howe, K. D. McKenzie, C. Nicholson, D. P. Sutton. Prosthetic Technic: T. C. DeMille. Bacteriology and Comparative Dental Anatomy: A. C. McKenna, K. D. McKenzie.

The following passed subjects out of their year:—H. E. Klingner, Intermediate Anatomy; E. H. Robinson, Intermediate Anatomy, Bacteriology and Comparative Dental Anatomy; W. T. Irwin, Histology; W. Sleeth, Histology; M. J. Gibson, Physics; N. Simpson, Final Physiology; L. Bannerman, Final Anatomy; H. M. Morrow, Final Anatomy; R. H. Browne, Intermediate Chemistry; G. B. Hardy, Intermediate Chemistry; W. H. McGuirl, Intermediate Prosthetic Dentistry; C. B. Johnson, Surgery, Medicine.

Those who have to complete any technic work will be notified at the opening of the term next October.

Trinity University.

K. C. MORPATH.

H. R. TWEED.

OFFICERS OF THE BOARD OF DIRECTORS OF THE R.C.D.S.

President, R. Bruce Burt, Hamilton; Treasurer, Bonneycastle, Bowmanville; Registrar, J. C. Bower, Ottawa; Secretary, J. B. Willmott; Assistant Secretary, W. E. Willmott.

THE NAMES OF THE NEW APPOINTEES AS EXAMINERS FOR THE DOMINION DENTAL COUNCIL

Presiding Examiner for Ontario, Dr. Wallace Seccombe, 144 Carlton St., Toronto. Vice, Dr. Chas. E. Pearson, resigned.

Examiner in Orthodontia, Dr. Chas. E. Pearson, 60 College St., Toronto. Vice, Dr. G. A. Roberts, deceased.

Examiner in Medicine and Surgery, Dr. Chester Abbott, London, Ont. Vice, Dr. Reade, resigned.

Presiding Examiner for Manitoba, Dr. C. H. Walsh, Winnipeg. Vice, Dr. Croll, resigned.

Presiding Examiner for Alberta, Dr. Doyle, of Calgary.

EXAMINERS APPOINTED FOR R.C.D.S., 1908.

Examiners appointed at the last meeting of the Board of Directors of the R.C.D.S. for the L.D.S. and D.D.S. examinations, 1908.

Presiding Examiner, W. E. Willmott; Physiology and Dental Histology, F. A. Clarkson; Prosthetic Dentistry, H. A. Clark; Medicine, M. A. Morrison; Surgery, J. E. Wilkinson; Operative Dentistry, James McPherson; Chemistry, W. C. Trotter; Materia Medica and Therapeutics, W. A. Piper; Anatomy, C. B. Shuttleworth; Histology Gordon B. New; Comparative Dental Anatomy and Bacteriology, W. Goldie; Operative Technique, A. A. Smith; Metallurgy, W. E. Cummer; Prosthetic Technique, D. M. Foster; Laboratory Practical Chemistry, W. C. Trotter; Orthodontia, C. A. Kennedy; Physics, W. A. Black; Practical Dentistry, A. A. Stewart; The Science and Practice of Dentistry, F. T. Coghlan; The Jurisprudence, History and Ethics of Dentistry, G. Silverthorn and G. M. Hermeston.

Proceedings of Dental Societies

**OFFICERS OF THE TORONTO DENTAL SOCIETY
ELECTED AT THE APRIL MEETING.**

President, R. G. McLaughlin; First Vice-President, R. J. McDonagh; Second Vice-President, H. E. Eaton; Secretary, C. A. Kennedy; Treasurer, C. H. Clarkson; Auditors, W. E. Willmott, W. G. L. Spaulding.

**THE ANNUAL MEETING OF THE EASTERN ONTARIO
DENTAL ASSOCIATION.**

The twenty-ninth annual meeting of the Eastern Ontario Dental Association will be held at Gananoque, June 19th, 20th and 21st, 1907.

Morrisburg, Ont.

WILL C. DAVY, *Sec.-Treas.*

IMPORTANT DENTAL MEETING OF DISTRICT NO. 5.

A number of the dentists of District No. 5 have considered the advisability of holding a district meeting in Brantford, to last "one afternoon and evening," during the first week in June. Among other subjects to be discussed are:

1. That of District Representative.
2. The recent act of the Legislature in legalizing to practise without qualifications.
3. The matter of fees.
4. The indenturing of students in the future.
5. A mutual talk on any matters relating to the profession which any member may introduce.

It is suggested that a banquet be held in connection with it. Tickets, \$1.00 each.

Brantford.

J. B. LUNDY, *Sec.*

**SECRETARY-TREASURER'S AND AUDITOR'S REPORT
FOR THE CANADIAN DENTAL ASSOCIATION
—1906 MEETING.**

TREASURER'S STATEMENT.

Receipts.

Received from former Treasurer.....	\$216 83
Received from Secretary, balance from 1906 Meeting...	20 84
Bank interest on bank deposits.....	9 30
	<hr/>
	\$246 97

Disbursements.

Cash paid to Secretary for 1906 Meeting.....	\$100 00
Exchange on above.....	25
Balance on hand.....	146 72
	<hr/>
	\$246 97

Dated April 6th, 1907.

(Signed) W. G. L. SPAULDING,
Treas.

Having examined the above account with the Account Book, I do hereby certify the same to be correct.

The balance on hand, \$146.72, is on deposit in the Bank of Montreal.

GEO. CLAY.
Chartered Accountant.

Toronto, April 29th, 1907.

**LIST OF ESSAYISTS FOR THE JAMESTOWN DENTAL
CONVENTION.**

Prof. W. D. Miller, of Berlin, Germany, subject, "Demonstrations of Preparation Relating to the Wasting (so-called Erosion) of the Teeth;" Dr. Charles L. Alexander, Charlotte, N.C., "Gold Inlays;" Dr. F. T. Van Woert, Brooklyn, N.Y., "Is the Cemented Filling the Filling of the future?"; Dr. R. Ottolengui, New York, N.Y., "The Angle Method in Orthodontia."

**DOMINION DENTAL COUNCIL OF CANADA—PROFES-
SIONAL EXAMINATION, JUNE 4TH, 1907.**

TIME-TABLE.

Tuesday—9 o'clock, Operative Dentistry (paper); 14 o'clock, Prosthetic Dentistry (paper).

Wednesday—9 o'clock, Operative Dentistry (clinical); 14 o'clock, Prosthetic Dentistry (clinical).

Thursday—9 o'clock, Orthodontia; 14 o'clock, Pathology and Therapeutics.

Friday—9 o'clock, Anesthetics and Materia Medica; 14 o'clock, Anatomy.

Saturday—9 o'clock, Physiology, Histology and Bacteriology; 14 o'clock, Medicine and Surgery.

Monday—9 o'clock, Physics, Chemistry and Metallurgy; 14 o'clock, Jurisprudence and Ethics.

Dominion Dental Journal

VOL. XIX.

TORONTO, JUNE, 1907.

No. 6.

Original Communications

HAS THE STATUS OF CEMENTS CHANGED SINCE THE INTRODUCTION OF SILICATE CEMENTS?

BY D. C. SMITH, D.D.S., STOUFFVILLE.

Delivered before Ontario Dental Society, Feb. 27, 1907, Toronto.

Mr. President and Members of the Ontario Dental Association,—Being pressed by the Secretary of the Ontario Dental Association to take the subject assigned to me, I reluctantly consented, more with the object of opening up a discussion on a subject which will appeal to every member of the profession as one that should be oftener discussed at our dental associations.

I hold that the use or abuse of plastic fillings, and more particularly that of cements, has more to do in the way of increasing or diminishing (and more particularly the latter) a dental practice than that of any other branch of our practice, as the cements have to do with probably 99 per cent. of our patients. You will agree with me when I say that you may impress as firmly as possible that a cement filling is but a temporary filling, yet the majority of patients (more particularly in the rural districts) who visit the dentist but once in three to six years soon forget, and the dentist is blamed for the lack of permanency of the filling.

Every practitioner, who has had any experience, knows that there are a number of cases where nothing but cement could very well be used, the condition of the teeth, as well as the age and purse of the patient, forcing us to that decision. This being the case, it is up to us to investigate, and find out the status of the

different kinds of cements we now have. We have no filling material to which we can apply the name "perfect," and therefore we must select from such as we have the most suitable for any given case, or particular class of teeth, considering, also, the condition of the cavity to be filled.

What, then, are we to do to overcome this deficiency? At present we have but three filling materials, which have survived the test of practical experience—gold, amalgam, and cements—each of which possesses certain advantages which adapt it to certain conditions. But of the three, you will all agree with me when I state that cements adapt themselves to the greatest number of varying conditions. Neither will my claim that it has by far the greatest preservative quality, by reason of its easy adaptation to the cavity and its harmony with the tooth structure, be disputed.

Let us enumerate some of the essential qualities of an ideal cement:

1. It must be of such composition as to be plastic during a short period of time and then rapidly harden.
2. In the act of hardening, it must neither expand nor contract.
3. It must possess adhesiveness, both while plastic and after it has hardened.
4. It must resist abrasion.
5. It must be essentially escharotic.
6. It must contain no organic matter.
7. It must be impervious to moisture.
8. It must be insoluble in the fluids of the mouth under all conditions.
9. The color should be such as to imitate the natural teeth.
10. The composition should be such that it will not be susceptible to changes or deterioration within a reasonable time.

To combine all these qualities in a single material presents a problem of no mean proportion, and to attain it would require all the energy that could be concentrated in scientific research, and is a splendid field for investigation for any of our young graduates who aspire to fame and honor.

The question for discussion to-day is, in how far are those qualities possessed by the zinc and silicate cements which we now have, or has the introduction of the silicate cements given to us in a greater degree that permanency and satisfaction which we are all longing for? Years of trial and failure have demonstrated the unreliable character of all zinc cements. It is the quality of insolubility which the makers of cements have been striving to achieve. Recognizing, therefore, that in the line of zinc cements no further improvement could be hoped for, manufacturers in different parts of the world have been searching for some new material, from which a true insoluble cement could be made. Among those materials which naturally appeal to the

mind as types of permanence, are the rocks of early geological periods, as quartz, granite, silicates, etc. It has been believed that if those could be split up into their component parts and combined with some fluid so the thing would pass into a plastic stage and again form a hard insoluble rock, or artificial stone, the problem would be solved and we should have the long-looked-for insoluble cement. That the acids or alkalies do dissolve zinc cement fillings has been so often demonstrated that I need not dwell upon this point. We must, however, admit, notwithstanding criticism, that they do fulfil a large number of the requirements which are recognized as essential in filling material. What we are anxious to know is, in how far has the status improved by the introduction of the silicates?

A few years ago we had our hopes raised high in the archite filling, only to have them blasted when we gave it a practical test in the mouth, as it turned out very brittle and did not wear any better than, not even as well as, the poorest zinc cement. It is with fear and trembling that we again decide to risk our reputation by the introduction of the silicate filling. Let us for a moment study the composition and qualities of the silicate cement. We find that Ascher's silicate cement (the one I am using) does not contain zinc nor oxide of zinc. The cement is composed of a powder and a liquid. The powder is composed of, Kaoline, about 50 per cent.; Silicum, about 25 per cent.; Lime, about 25 per cent.; Magnesium, about 2 per cent.; some Beryllium, and some water that disappears when it is heated. This mixture (almost the same as porcelain body) is heated for several days to a temperature of 1700 degrees C. The liquid consists of phosphoric acid, ortho-phosphoric acid, acetic acid and water. There seems to be a vast difference between a silicate cement and a phosphate cement. The saliva of the mouth does not have the same effect upon a silicate cement as it has upon a zinc phosphate cement. In the latter we formed zinc phosphate, calcium phosphate and some other combinations which are more or less dissolved by the acids of the mouth; but in the former, the silicate cement, double combinations are formed, from Kaoline, plus lime and phosphoric acid, and silicum plus magnesium and the acid, and these double combinations seem to prevent the saliva from dissolving the calcium phosphate and the magnesium phosphate, which are the weak points in the zinc phosphate cements. Not being readily dissolved by the liquids of the mouth makes the silicate fillings in many cases preferable to the phosphate cement fillings. The question arises, "Have we been using the silicate cements a sufficient length of time to warrant us in coming to a safe conclusion as to their permanency?" I maintain we have not, but we have used them a sufficient length of time to allow us to make comparisons with the other filling materials and ascertain if they have a place as a filling material. I have kept a record of fillings inserted during the last ten

months and have examined 50 per cent. during the past month or so, and have found that they have stood the test a great deal better than the zinc cements and almost in every case looked as well as when inserted.

One patient, particularly in my mind, for whom, about eight months ago, I inserted silicate and oxyphosphate fillings at same sitting; on a recent examination I found that the oxyphosphate fillings were partially washed out at the approximal-gingival margin, while the silicate fillings were in no way affected. Another case was a patient (a young man of about 17), who visited my office and, on examination, I found eight silicate fillings inserted in his superior-anterior teeth, about eight or nine months ago, by Dr. Clark, of Newmarket, and the fillings appeared in as good condition as the day inserted. He seemed very much pleased at the satisfaction they were giving him, as he said he had them previously filled with oxyphosphate cement, which did not last very long. Where due care and discretion is made in the choice of cavities, as well as age and temperament of patient, the silicate cement (when directions are closely followed) is to my mind preferable as compared with zinc cements.

I have just made my comparison between the silicate and phosphate cements, and I would now ask in how far would the silicate cement take the place of gold? I have heard of a few dentists who took out the gold fillings for a patient and substituted the silicate fillings, the patient giving as a reason her abhorrence of so much gold in the anterior teeth. I consider this a grave mistake, as I do not believe that we have yet a permanent filling that will compare with gold for permanency, where there are like favorable conditions and when properly inserted. But I claim there are cases where the silicate surpasses any other filling material. About four months ago I had a young lady about 20 or 21 years of age (who lately moved to town) visit my office with an abscessed tooth. She had about that time recovered from a serious attack of typhoid fever, she was evidently a bundle of nerves and recited stories (which we all are familiar with) about her trials and tortures, at the hands of the dentist, under whose care she was, where she previously lived, and declared she could not and would not again undergo the tortures of gold filling, and even the dental engine had to be kept in the back ground as much as possible. I at once thought that if the silicate filling ever had a place in dentistry this was one. The rubber dam was easily adjusted and the cavities were retentive, a few of the cavities being previously filled with gold. I filled with the silicate filling and so far appear to be giving good satisfaction and were inserted with but little discomfort to the patient.

They are also indicated in cavities near the labial-gingival margin, where we find it sometimes so difficult to force the rubber dam in place, and where the decay reaches well under the gum margin. I inserted, about seven months ago, for a little

girl about 14 years of age, two such fillings in the superior centrals, labial-gingival margins. I kept the cavity dry with absorbent cotton and punk, and also adrenalin chloride. On examination a few days ago I found it as perfect as when inserted. I am convinced that phosphate cement would not wear as well, and the hypersensitive condition of the dentine, as well as the difficulty there would be in getting the rubber dam in place, would not permit gold to be inserted. Another case that would indicate a silicate filling is that of boys and girls ranging from the age of 8 to 16 years of age. We all realize that children have not reached the age when they know the necessity of having good work done. About the only thing the child is thinking about is as to whether it is going to hurt or not. You want to retain the respect and love of the child, and to have him continue as your patient during life. If you torture that child for an hour or more every day for a week, what is the result? The child will have such a dread of the dentist that you will never again get it into the dental chair.

There are cases where plastics are indicated. I remember reading a strong plea made by Dr. Ottolengui, to fill all children's teeth with gold, but in the discussion which followed the reading of his paper, a storm of opposition and dissent ensued, and very little sympathy was given him in the position he had taken. I do not believe that it is advisable to insert gold if the pain or nervous stress of insertion will be a greater loss than the difference between the services of a plastic or gold filling. I believe the best results are obtained by inserting amalgam in the posterior teeth, and phosphate and silicate cements in the anterior teeth.

Dr. W. D. Miller, of Berlin, says: "Supposing the tooth to be fully developed and of good structure, and supposing that the patient has the necessary power of endurance and that the teeth are not so crowded as to render it difficult to obtain the necessary space, without undue wedging, I do not see any particular contra-indication against filling teeth of young persons with gold. I have seen cases, however, where the teeth could be carried over the period of greatest activity of caries better by cement than by gold." I do not consider it wise to use a gold filling for a young patient, where the cavity is so very large that the malleting of the gold will cause peridental irritation sufficient to injure the tooth. Again, in many young patients, the decay has approached so near the pulp that there may be some doubt about it remaining alive; in such cases cements should be used.

Silicate cements would be indicated in cases of teeth with chains of deep pits on labial surfaces. Instead of sacrificing those teeth by excision and crowning, the silicate filling appears to clear up the defects and a detection of the repair is not possible. Another place in dentistry for a silicate filling is in repairing facings in crown and bridge work. I had a lady come into my

office wanting me to repair a bicuspid facing on a piece of bridge work of five teeth. The bridge was solid on abutments and not easily removed. I got anchorage under the laps of the gold, and added to this retention with engine and bur; to this retention, together with the pins, I found sufficient to retain the filling. I filled in with Ascher's cement and followed the general direction in mixing and filling and the effect was very satisfactory. Permanent work would depend a great deal on the anchorage secured, as well as the mixing and manipulation, and keeping dry before and after insertion.

I may say that I am not an histologist, and consequently felt that instead of coming here and giving you my humble opinion on the status and relations of the different filling materials, I would reserve my own views and base expressions thereon entirely on the clinical aspect of the cases as I have seen them.

A few words about the preparation of the cavity, as well as the mixing and insertion of filling.

The cavity for a silicate filling should have an undercut, or retaining point. The edges of cavity ought not to be bevelled as for gold, but with sharp edges as for porcelain inlays. I do not believe it advisable to build up a corner with a silicate filling, although Dr. Fuller, of Chicago, says he has successfully done so. The rubber dam should be used where possible. After the cavity is prepared, and previous to the insertion of filling, dry carefully with hot air. I believe one of the principal requirements to insure success with the silicate, as well as all cements, is the attention that should be paid to the mixing. Mix with bone spatula and have your glass slab clean. Each portion of powder should be rubbed and spatulated, using a good deal of pressure. Care must be taken not to mix too dry, and not to add powder when it gets to a stiff consistency, as it is impossible to incorporate it, and the result would be that it would flake and disintegrate and prove to be very unsatisfactory. When it sets to that consistency that it sticks readily when touched to the glass slab, it is ready for insertion into the cavity. Press the material well against the sides of cavity, by means of a nickel or clean polished instrument; in that way to prevent discoloration of filling. I would leave for about thirty minutes before finishing. When sufficiently hard for polishing, I would first cut down surplus, with chisels or spatula, and finish to required shape with cuttlefish disks greased with vaseline.

I have heard of a certain dentist who prepared ten cavities before inserting a filling. Comfort to the patient, as well as a saving of time, is the result of filling immediately after preparation of one or two.

The smooth, glossy surface contrasts strongly with the dead-like surface appearance of the zinc phosphates, thus indicating greater solidity, and therefore resistance to attrition and infiltration. When the above directions are carried out a failure

is seldom made, and a filling far superior to the phosphate cement filling is obtained and the silicate filling will have its own place in dentistry, until we get something better to take its place.

DISCUSSION.

DR. MCCOY.—I must refute a statement of Dr. Smith's, who represented me to you as an expert in silicate cements. I thank him for the courtesy, but I must explain to you, gentlemen, that I am just simply a co-worker with the rest of the dentists. Possibly I have had a few months' longer experience than the essayist, but I have yet a lot to learn about the subject.

The discussion that I prepared makes me feel something like the old story of the deaf man who was making gate-posts. He was so deaf that he could not hear a word. Looking up the road he saw a man coming down on horseback and he thought, this man is going to stop and say something; I will have to prepare answers. The first thing he will say is, "What are you making?" I shall say, "Gate-posts." The next thing he will inquire about will be, "How far do you sink them in the ground?" The deaf man looked up and said to himself, "I will point up to that knot." Then he will ask, "How do you sell them?" I will answer, "Ten shillings a pair." He will say, "That is too much; I cannot buy them." "Well, then," I will reply, "if you don't buy them someone else will." The horseman came along and said, "Good morning, sir." The deaf man answered, "Gate-posts." The horseman, "What do you mean?" The deaf man, "Up to that knot, sir." The horseman, "What are you saying?" The deaf man, "Ten shillings a pair." The horseman, "I have a good notion to give you a good licking." The deaf man, "Well, if you don't somebody else will." (Laughter.) Well, now, the discussion I prepared was based mainly on the title of the subject. "Has the Status of Cements Changed Since the introduction of Silicate Cements?" Some of the points, probably, of my discussion will have no more bearing on the paper than this deaf man's idea of the conversation that was going to take place with the man on horseback. However, I have got a synopsis of the points he touched on.

I may say there are two principal points to be observed in the use of silicate cement, that is, the preparation of the cavity and the mixing of the material. There is one thing that you want to emphasize at every turn, every motion you make, and that is absolute cleanliness. I cannot be too strong on that point. The slightest smear, possibly even the natural moisture of the skin over the slab, is enough to give a bad result.

The preparation of the cavity, as the essayist said, should be the same as for a porcelain inlay, only for the porcelain inlay you don't make the cavity generally retentive, but in the preparation for the silicate cement you leave the cavity in every case generally

retentive. If the cavity is a box-shaped cavity, where you can get sufficient structure, as a general rule you can dispense with the grooves, but in the approximal gingival cavities in the anterior teeth you have to resort to the grooves.

I got a suggestion from Dr. White, of New York, when I was in New York City, last year, that I think a great deal of. He asked me to insert a filling for him at the Convention. I did so, and I asked him if he had an inverted cone bur, as I wanted to make a cavity. He said he never used them, and I asked him what he did use. He replied, "I use a small rose bur." Thinking over it afterwards I could see the force of it. Where you use the inverted cone bur you would be very apt to have an acute angle to be filled (L). In the use of the rose bur you would have an obtuse angle, which you can make the filling adaptable to with better effect.

The enamelled margins must be squared as near to right angles as possible, and you should have them free from irregularities as much as you can. Don't let them have those little bays that you often see. Have your cavity margin symmetrical and a square, and I think if that is followed strictly you will have an ideal cavity preparation for silicate cement.

Another point. After you have prepared the cavity, I think it is well to use peroxide of hydrogen to remove any animal matter that might be there. Follow this with absolute alcohol and hot air; then you get an absolutely dry surface. So much for the preparation of the cavity. In the mixing of the cement I think a great many failures are due to trying to incorporate too much powder at once, so that you do not get a homogeneous mass. The first thing to do is to see that the small quantity that you incorporate with the liquid is thoroughly incorporated before you add any more, and have a constant pressure on your spatula, in order to grind the powder as finely as possible. You should add powder just sufficient so that when you lift the spatula some cement sticks to the slab and some to the spatula—as soon as it comes to that consistency it is ready for insertion.

In a great many cases men try to insert it the same way as a cement filling; they put it in in bulk and knead it into place. I have never found that successful, as you are not sure of getting it into all portions of the cavity. Introduce the cement into the cavity in small portions; fill the under cuts of the corners first and be careful each time to draw your instrument so as to push the cement against the walls; keep working it up similarly to using the burnisher in the amalgam filling; introduce piece by piece; then follow out the same principle, using the cement you have last in the centre to act as a keystone. Then is the time to put vaseline on the instrument, just a little vaseline, and with that you can work the cement to the margins and seal all the margins with the cement. By that time you will find it is commencing to partially harden. Then I use a celluloid strip and

place that over the whole filling, as the translucency of it enables you to see your work. Then, with a metal spatula, give pressure there to further condense the product, which has a great tendency to detract from the shrinkage that is claimed.

In his paper the essayist spoke of the composition of silicate cement. By your permission I would like to read an extract that would probably solve that. It is from a lecture published in a journal, and is written by Dr. H. Cobden Smith, of Harvard, Instructor of Chemistry in Harvard Chemical School:

"An advertisement of one of these preparations claims that its success is due to the use of a very valuable compound, without which it would be worthless, and so far as the author has had opportunity to investigate this subject, this statement seems to be true. A qualitative analysis confirms the claim of the patent specifications, both in regard to the composition of the liquid, and the presence of oxide of beryllium in the powder, and it is probable that the value of these preparations depends largely upon the proportion of beryllium entering into their composition.

"Beryllium is one of the rare metals which occurs naturally with aluminum as a silicate. It forms basic compounds of such character as makes it suitable for use in dental cement."

He finds that their claim is right, that there is beryllium in it, and that makes it so expensive. Another thing he says is that it is beryllium oxide that adds to the adhesiveness of it.

I may say that I have used this cement for about seventeen months. I think I have put in in the neighborhood of 75 to 80 fillings, and I can honestly tell you that out of that number I have had to replace one, and of all that I have examined I have seen no signs of disintegration whatever. This one failure was where I capped the pulp with Cox capping, and I do not think there is any material that will stick to that at all, for it is of an oily consistency, and I attribute the failure to that.

I do not think of any more points to discuss at the present time, but, gentlemen, if there are any I can enlighten you upon I shall be pleased to do so, of course.

DR. BOTHWELL.—What instrument do you use in inserting that artificial enamel into the cavity?

DR. PRICE.—I would like to hear as to the varnish or coating over the cement filling. Some claim it is better before the cement is thoroughly hardened, before moisture comes in contact with it. I would like an expression of opinion on that.

DR. A. H. ALLAN.—Does silicate cement retain its color with age?

DR. EIDT.—There is one thing I should like to hear about, and that is putting in silicate filling without the rubber band. I think it is just as necessary to keep the cavity dry for a cement filling as for a gold filling, and I cannot see how it can be kept dry for half an hour, if you wait before polishing it, without the rubber dam. I think the rubber dam is absolutely essential to

that. I have used Ascher's cement for nearly two years and I have two fillings in my own mouth put in by my own student, and they are just as good to-day as when put in. I would like to ask Dr. McCoy what kind of spatula he uses, and when he works in the filling by bits how he keeps it from sticking to the instrument.

DR. SECCOMBE.—What causes the filling to become so brittle? Is that on account of mixing too thin or too thick?

DR. EIDT.—It escaped me to ask whether Harbardid is as good as Ascher's.

DR. BENNETT.—Do these fillings discolor?

DR. WEBSTER.—Last year, at this meeting, Dr. Charles Pearson made several experiments in connection with Ascher's artificial enamel, and so far as he had gone he was not able to make out from these experiments any definite report as to its expansion and contraction, which is an important factor. Of course there are men, like Dr. McCoy, who has just said that he would sweep the experimental work all away; but it must be dealt with. Who gave us a thorough knowledge of amalgam? They were the experimenters outside the mouth, not in the mouth. We never knew anything about amalgam until those experiments were made by Black. We did not know about oxyphosphate until it was subjected to experiments, and we won't know much about Ascher's enamel until it is put to a similar test. Certainly those cements have come to stay and they are certainly good cements. Harbardid is another variety. Then there is porcelainoid, which claims to be an original cement. Hoffman says the others are all copiers of his. Then there is another one, Astrol, which is another good cement. They all have merits of their own, they are all of a class. We have not yet come to the time when we can say definitely how they should be mixed, how long they will contract and how much they will contract and expand. You will note, however, that they have no adhesive quality whatever, I don't care where you place them. As a matter of fact, no cements have any real adhesion. If you think, you will understand they have not. It really depends upon their strength. The cement squeezes into little inequalities in the cavity and does not readily come away until those little points are broken. Cements do not hold like gum arabic and cassia. Any of these silicate cements that contract will be more or less a failure. We find many of them expanding as soon as inserted, and they will go on expanding twenty minutes, and then contract a great deal more than they expanded originally. We find certain characteristics pointed out by the essayists in connection with the mixing of the cement, which are important. Until we know how to mix these cements, how to insert them to the best advantage, and so on, we will not know how to get the best results out of them.

DR. THORNTON.—Dr. Jordan has just made a suggestion to

me. He says we did not know anything about amalgams until Dr. Black gave his attention to them, and I had forgotten until Dr. Jordan suggested it that the Dean says that, with all our boasted knowledge of amalgams at the present time, we are not putting in better amalgams than we were thirty years ago, when we did not know anything about them. Dr. Webster says that there is no adhesion in these cements, but I have been mixing cement with a bone spatula and it sticks very tenaciously. Does it go into the little interstices of polished bone?

DR. WEBSTER.—Into the little scratches.

DR. THORNTON.—The spatula was not scratched, but absolutely polished.

DR. CLEARY.—I would like to ask the essayist if in inserting Ascher's enamel he observed the same precautions as in inserting oxyphosphate filling. If he would observe the very same precautions I think he would get almost as good, if not better, results from oxyphosphate fillings. The point Dr. Webster makes with regard to the expansion and contraction of Ascher's enamel is one of the points that has been troubling me in connection with this filling. I have treated Ascher's enamel just as I would phosphate filling. I have not inserted one without the rubber dam. I have inserted in two different cases about half a dozen fillings, in each case in similar positions, and I endeavored to mix the cement at the same temperature, and I found a very great difference in the temperature at which the cement is mixed. I endeavored to observe that closely. I have had a great deal of trouble to put the cement in the proper place without putting a small portion of vaseline on the instrument. Our friend from Buffalo does not seem to have that difficulty, but I have had it. I removed four of these fillings put in by a first-class dentist, and I do not think he observed any more cleanliness in inserting Ascher's filling than any other filling. I do not know why any particular stress should be laid on that. I think it right to observe absolute cleanliness in any case, and not pay particular attention to Ascher's enamel alone. With regard to the point raised by Dr. Thornton, I agree with him. I think there is considerable adhesiveness in a cement filling. Even supposing there is no adhesiveness, if the slight scratching at the base of the cavity will produce the effect, then we have all the advantages of adhesion. I think it is an excellent filling, and if we treat our phosphate filling, in the insertion of it, in the same way as Dr. Ascher's enamel, I think we will get very good results also.

DR. MCCOY.—The first question is, what instrument should be used for the insertion? I use one with a tortoise shell point; that is what I am using now. In the first place I used to use just a steel instrument, and before inserting it I constantly dipped it in absolute alcohol and passed it through a flame, so as to have it absolutely clean. I used it to pack in the first pieces, and then, as I came to put in the pieces of cement nearer the surface, I

used another instrument, but recently, since I obtained these tortoise shell points, I have used them exclusively. I like them very much.

The next question asked is about the coating after insertion. You will read in some literature that they advise the coating of the filling after insertion. I do not use any coating.

The next question is, does the silicate retain its color? Gentlemen, I stated at the outset that silicate cement is on trial. As yet I have seen no difference, no change. I cannot answer that question finally yet. I have noticed the first filling I put in—it is in our own household—and there is no visible change. By the way, it is a molar, the first molar, and it takes in probably a third of the crown, and it is very gratifying to find that that filling has withstood the force of mastication and the action of the fluids of the mouth.

The next question is, what kind of spatula to use? Well, a bone or ivory spatula answers very well. A gentleman here says he uses a glass spatula; that will do very well. I have used an agate spatula. They all answer equally well. The reason I prefer bone or ivory is that if it drops on the floor it does not get broken.

How to keep the cement from sticking to the instrument? I keep the instruments absolutely clean with alcohol. I notice the first little piece of cement I insert that the instrument being very clean I can pack it in several times before it starts to adhere to the instrument—here I would say cement has adhesion. (Laughter.) Then I dip the instrument from time to time in alcohol and insert the cement and pack it into the cavity, then I dip it in absolute alcohol and continue the work, and I find that alcohol evaporates fast enough so that it does not prevent the adhesion of the next portion of cement.

Another question is, why does the cement become brittle? I think there can be two ways—either by making too thick a mix or too thin, and here I might say a thing that I have observed. A thin mix will make a very natural-looking filling, as the translucency will be greater, but it will not have the durability of the thicker mix. So by mixing thin you sacrifice strength for appearance. I mean by that that you have a stronger filling with a thick mix than you would with a thin mix, but a filling not quite as good in appearance. Again, not stopping the incorporation of the powder soon enough will also give you a brittle cement. When you find when spatulating that adhesion takes place between the cement and the spatula it is time to stop incorporating any more powder; any more you incorporate after that tends to make a brittle mass; it will flake off.

Speaking of Harbardid, I have no experience with it, gentlemen. I have only used Ascher's.

I see by a pamphlet given me by some gentleman that in a test for shrinkage it was found that Ascher's resisted better than

any others. I attribute discoloration to defects of the operator, not of the silicate.

There was one question, if you will permit me to touch upon it, which I neglected to speak about when discussing the paper. The essayist spoke of those cavities on the labial gingival margin where rubber bands could not be inserted. I do not think, without I could be sure of absolute dryness, that I would like to put Ascher's cement there. I would prefer to put gold as far as underneath the gum line and follow with silicate cement for appearance sake. (Applause.)

DR. D. C. SMITH.—I am not sorry at the present time that I have written this paper, as it has brought out exactly what I wanted, and more than what I looked for. I am very glad, indeed, that the discussion has taken place in regard to this cement, as we get information through it. It is the lack of information in regard to this cement that is the cause of a great many of its failures. For instance, there were points by Dr. McCoy that probably others who were formerly inserting this cement did not know anything about; in cleanliness, in using different kinds of spatulas, and the mode of insertion, and in all of these things it is the attention to these minute points that will bring about success in the insertion of any of these cements.

Now, in regard to adhesiveness, that was touched upon by Dr. McCoy, and I do not think it is necessary to say very much in reference to that point. As any of us know who have used this cement, if the spatula is left on the table as long as the rubber band is left on the patient's teeth, there will be a great difficulty in cleaning it afterwards, for we all find that the adhesiveness is so great that very often when we are in a hurry and busy it always tries our temper cleaning the spatula. So that in itself shows it has adhesive powers. This brings me to a point I would like to make reference to. It is the keeping clean of the spatula. It is a thing I did not know till Dr. McCoy showed me in this clinic. Immediately after using he places it in a glass of water and leaves it there for a short time, when it is easily cleaned.

DR. WEBSTER.—What about adhesiveness, then?

DR. SMITH.—It does not get time for that. The adhesiveness is interfered with by other chemical matter. (Laughter.)

I do not think there is any other point in regard to this paper that requires to be answered. I am sure that we, as members of the Ontario Dental Society, must be thankful to Dr. McCoy for coming here and giving us so much information on a subject of which we knew but little. I think, after what we have heard to-day, that there will be more using this Ascher's cement. It is certainly not a permanent filling. We both agree in that, that we have not used it long enough to come to a safe conclusion as to its permanency. Time must tell that. We have had misfortune and failure with gold as well as with other fillings, so that, as far as coming to a conclusion, it must take time.

There was one question I was just going to forget. It was asked by a doctor from Ottawa. He inquired if I took the same precaution in putting in the phosphate cement as the silicate. I think I illustrated that in my paper where I mentioned I inserted in two cases one with Ascher's and one with phosphate, and I found the phosphate filling partly washed out and the Ascher's scarcely touched at all. So that was enough for comparison.

PRESIDENT'S ADDRESS.

BY J. T. COGHLIN, GUELPH.

Delivered at the Eighteenth Annual Convention of Ontario Dental Society.

Since meeting here a year ago it has been our sad duty to record the death of one who had attained a prominence in our profession, and whose foremost desire and greatest ambition was the elevation and professional advancement of dentistry. I refer to our immediate past-President, Dr. J. R. Mitchell.

The primary object of our meeting here annually is for the increasing of our own individual knowledge, to learn something from each other, and to give the other members of our profession the benefit of anything we may know, and in the reading and discussing of various subjects, many points of importance, which otherwise could not be reached, may be brought out and made clear to every one present, as well as to all others who choose to read the account of such meetings as published in our **DOMINION DENTAL JOURNAL**.

It is such gatherings as this that makes us know the other members of our profession better, and by the better knowledge of each other we are more freely disposed to tell and discuss what we may know.

Many of us possess knowledge which would be of infinite value to our fellow practitioners, but we, ourselves, underestimate the value of such and thereby fail to impart it so that others may receive the benefit. I would put forth an earnest plea to the profession at large to attend in even greater numbers than the present growing attendance. I know there may be many who attend conventions feel, while present, that the time might have been more profitably spent at home, but if we are good listeners, close observers, and think a little, each of us will have been benefited by having been present.

I have never yet had occasion to regret the time and money spent attending a dental convention, and I trust my experience may have been that of all.

By increased knowledge of the individual member, the ad-

vantages to the whole profession are enlarged, and we thereby become a stronger and better factor in the public world.

It is a matter of much satisfaction to us that the Department of Agriculture has taken cognizance of the desirability of educating the public in the necessity of the care of the teeth to the general health. This subject was ably treated, as you all know, by a worthy representative of our profession in the person of Dr. A. E. Webster, before a convention of delegates from the different women's institutes throughout the Province, held at the Ontario Agricultural College about the close of last year. It was appreciated and had telling effects, as I have since been informed by ladies who were present and profited by it. The place for such a lecture was ideal and the circulation of its benefits assured, even though it should never be published in printed form, and, might I add, the missionary was a person, to the audience, most taking and impressive.

The present combined course of medicine and dentistry, covering a period of six years, is a grand opportunity for the more rapid elevation of this already noble profession in the public estimation. If we can induce students to take this course and graduate in medicine in order that they may practice dentistry, which in reality is a specialty of medicine, to greater advantage, then we will have accomplished much. When we shall have members of our profession generally qualified and able to perform such surgical operations in the oral cavity as the removal of a superior or inferior diseased maxillary bone, and other operations of similar magnitude, when occasion demands, it is then that the services of our profession in general will receive much greater appreciation in the public eye. And with the performance of such operations, involving, as they do, the use of general anesthetics, we will the more readily receive the proper public estimation of our ability in the administration of such.

True it is that at the present time we are called upon to perform operations involving the necessity of general anesthesia, but we are not performing all the operations in oral surgery that we, as members of the dental profession, should be capable of and willing to perform, and why? Because our knowledge of general medicine and surgery is not sufficiently great.

The educational standard of graduates of the Royal College of Dental Surgeons of Ontario to-day is higher than that of any other dental educational institution in the world, and there can be no reason for any member of the profession not living up to the high standard he has obtained at the beginning of his professional career. We must ever be students if we shall succeed, and surround ourselves with the best obtainable literature our profession can supply, and by general study of the subjects with which we have to deal, many bright and clever things, surely, cannot fail to emanate from the many intellectual individuals who so

proudly look back on the Royal College of Dental Surgeons of Ontario as their alma mater.

DISCUSSION.

DR. HUME.—Gentlemen, you have heard the President's address, and it certainly shows that he has gone to considerable trouble and has given considerable study to the subject.

DR. J. B. WILLMOTT.—I have no idea of entering into any discussion of the paper as presented by your retiring President. He has called attention to two or three matters of great interest. There is one matter, however, he has not called attention to, and with the permission of the presiding officer I will call attention to it at this moment. All the members present, I presume, received a circular from the office of the Board of Directors a week or ten days ago calling attention to the fact that an application had been made by Miss Sadie Holmes, of Tilsonburg, to be authorized to practice dentistry without conforming with the requirements of the law. I am very pleased to have received several letters during the last four or five days from members of the profession, who stated they had already written to the members of the Legislature in their constituencies giving their views, and had received from them assurances that they wouldn't support any application of that kind and would do anything that lay in their power to defeat it. That is all right as far as it goes, but I have been before the Private Bills Committee probably twenty times endeavoring to defeat just this kind of application, and my experience is that these endeavors to defeat the Bill do not materialize. I think I can only call up two names of gentlemen in the Legislature during the last two years who have really offered us any assistance at all in defeating these Bills—possibly three. Mr. Gibson, the late member for the City of Hamilton, assisted us in Committee and out of Committee, and any fight that has been made in the Committee, with very little exception, has been done by Mr. Gibson, and he succeeded in entirely defeating these applications or modifying them to an important degree. Mr. Gibson is not now in the House. Mr. Harcourt has given us some assistance on two or three occasions, and also Mr. Kingston, but what we want, if we are going to succeed, is some man who is a member of the Private Bills Committee who is sufficiently interested to get up in the Committee and oppose the Bill. Now from recollection these are the only three men I have ever heard in the Committee who have opposed legislation of this kind.

Now, you gentlemen know your own representatives, and some of them are on the Private Bills Committee, and if you can influence some of these men who are opposed to that kind of thing on principle and get them sufficiently interested to oppose it in the Private Bills Committee, you may do some good.

I don't know whether you gentlemen know much about this lobbying business, and it is well if you never do. If you never have to go before the Private Bills Committee you will have more respect for it than you would have otherwise. Some member takes charge of the Bill, and he makes it a personal matter, and he button-holes his friends, usually of his own political party, and makes some sort of an agreement with them. I presume it is largely in the nature of you pat me and I will pat you; if you will help me through with this I will help you through with yours.

Three years ago we were waiting at the Private Bills Committee Room probably for two hours while the Bill preceding the one we were interested in was being discussed, and there were probably thirty men in attendance at the Committee sitting around, and the moment that Bill was disposed of every man but four got up and left the room, and the man that had charge of the Bill we were opposing walked in with fourteen behind him that he had in reserve. They sat down at the table, and when the Bill was called these fourteen men, of course, were pledged men, and they were there for the express purpose of putting that Bill through. The other four men were there attending to their duties, and were ready to listen to arguments and take such action as seemed to them best, and when the vote was taken it was four against these men that were brought there to put the Bill through. The Bill has no chance to get through unless some member of the House takes a personal interest in it. If he does, and it is an influential member of the Committee, the chances are it will go through. There are probably two-thirds of the House who are opposed to the Bill on principle, but that doesn't count. Even if they are at the Committee they don't care to be placed on record as opposed to it, and the applicants have solicitors, and the chances are these Bills go through. Of course, where corporation Bills are introduced there is very strong opposition, and Municipal Bills have strong opposition. There is always somebody in the municipality opposed to somebody else in the municipality and they have to fight it through, but a matter of this kind can slip through the Private Bills Committee very easily. Now, what I would like you gentlemen to do in the first place is to sign a petition to the Legislature, which is drafted and which is on the table. I presume, of course, you have all written to your representatives or will write to them. I will read the petition and then you can see what it is and any objectionable points can be discussed.

DR. MURRAY.—I have in my hand a notice that one of the dentists has sent in. It is from the Chairman of the Private Bills Committee, and he says he fancies the Bill hasn't much of a prospect.

DR. WILLMOTT.—Don't take anything for granted until you see the Bill thrown out.

DR. MURRAY.—He says he does not think the Bill will carry, but still he would advise every member of the profession to see their member, which I think a good many have done.

DR. THORNTON.—I would suggest in connection with the matter that has just been spoken about by the Dean, if there are printed lists of the members of the Private Bills Committee, that one of those copies should be obtained and the names of the members of the Private Bills Committee read here, so that each man will be able to recognize whether or not the member of his constituency is on this Committee or not. Then if he is, let him go and see him personally. It will be better to have a private talk than to write to him, and you will be able to pin him down a little closer. I may say in reference to that letter, I was at the Legislature one day this week, and the very matter suggested in that Bill was mentioned to me by one of the prominent members of the Legislature. He said if the Ontario College of Dental Surgeons would agree to give this young lady her matriculation the Legislature would not need to do anything. The only reason they give for granting her petition is that she is an exceedingly fine-looking young lady. Now, if that is the only requisition to practice dentistry we will have every woman in Ontario practicing the profession.

DR. H. R. ABBOTT.—If any of the members are going to the Legislature to interview their members I might state that her petition is absolutely false. That is, in one particular that I have personal knowledge of in her second paragraph. She says she was in Dr. Fred Woods' office for eighteen months, during which time she was practicing dentistry and part of the time had complete charge of the office. Now, Dr. Woods is willing to come before the Private Bills Committee and testify to that effect. Someone asked who was supporting the petition. A judge in Woodstock is working very hard for her. Dr. Woods said she never pulled a tooth or extracted a tooth while in his office, and that can easily be brought to bear upon some of the men who believe her petition. Her petition as regards that is absolutely untrue.

DR. M. MCKAY.—I am rather sorry I signed this petition now. I would not have done that had I known she was so very good-looking. (Laughter.) However, in union there is strength. We are right here upon the ground, two hundred in number, and a number of the city dentists are present. Let us go to the Legislature *en masse*. Let us go to the Premier of Ontario. Let us not go about the matter in any circuitous manner, but while we are here for three days let us go in a body to the House and lay the matter before the Premier. (Applause.)

DR. HUME.—If this lady is so exceedingly good-looking it is a sufficient justification for the gentlemen in the dental profession to do their best as a matter of self-protection.

DR. WILLMOTT.—I would move that this matter of interviewing the Premier be referred to the Executive, to be reported on to-morrow.

DR. MCKAY.—I second that.

The President put the motion which, on a vote being taken, was declared carried.

DR. HUME.—If there is no further remarks on the subject I will call in the President to close the discussion.

THE PRESIDENT.—Mr. Chairman, Ladies and Gentlemen, The matter which Dr. Willmott has placed before you is at the present time, I think, of much more vital importance to the profession here assembled than perhaps is the President's address, and I will waive any discussion of the address, as the other subject requires immediate attention and must be dealt with and dealt with carefully. I was informed by a member of the Private Bills Committee who was and who is strongly and directly opposed to the application of this young lady, that other members of the Private Bills Committee didn't show any direct antagonism to the petition as presented by this applicant. They can all see clearly that she has no grounds for presenting such a petition, and there is no foundation for such a Bill. It is a most outrageous thing, but in an affair of this kind it is just possible it may slip through unless we as the dental profession of the Province look after it very carefully and be on the ground when the Bill is presented and oppose it in the proper way. It could only be allowed to go through, I think, from negligence on our part. A Bill like that concerns very little the members of the Private Bills Committee, and whatever influence the parents of the young lady may have on the members I am not prepared to say. I think Dr. Thornton has been up there and has sounded a number of them as to the effect she has on them. He is in a better position to lay before this meeting the effect she has had on them than anyone else. However, Dr. Willmott has suggested to you that it is a very important matter to the dental constitution that this applicant shall not have her petition granted, and I hope that after the meeting adjourns that the members will sign the petition which has been prepared. I have much pleasure in closing the address. (Applause.)

DENTAL MEDICINES.

BY A. E. WEBSTER, M.D., D.D.S.

Read before the Montreal Club, May 3rd., 1907.

The subject of dental medicine is too large a one to be taken up at a single meeting, so I shall attempt the discussion of only those parts of the subject which have been given special attention during the past few years.

An accurate knowledge of Anatomy, Histology, Physiology and Pathology generally reduces our faith in drugs, and increases our dependence in nature's efforts to restore diseased conditions to health. Surgical interference, so long as it assists nature to recovery, is of inestimable value, but as soon as it is contrary to what nature would do, it is baneful. Since dentistry is almost all surgical in character, it must of necessity have for its primary object the assisting of nature to recovery or to protect herself against disease. This is exemplified in the treatment of caries, the treatment of diseased pulps and associated parts and the treatment of pyorrhea alveolaris. We must admit that the treatment of diseases of the mucous membrane is strictly medical in character.

If the foregoing view of the work of the dentist be a correct one, all the medicines we use are those adapted to the treatment of surgical diseases or used in connection with surgery. On this basis let us consider the subject to-night.

The surgeon requires anesthetics both general and local, and the use of these drugs demands the use of their antidotes. Let us consider local anesthetics only. The dental surgeon's knowledge of anesthetics, and especially local anesthetics, should be as thorough as possible, because nearly all surgery is more or less painful.

Extraction under local anesthetics has practically reduced itself to refrigeration and hypodermic injection. Ethyl chloride spray and ether spray are two of the most useful drugs for refrigeration. Their application is simple and their efficacy marked in some cases. It is to be noted that especially in the use of ethyl chloride spray, the vapors may be allowed to pass before the patient's nostril, and thus produce a general anesthesia. The operator must be prepared for such a consequence and in fact take advantage of it. The marked results from local refrigeration from ethyl chloride spray are more often due to the general effect than to the local.

Ethyl chloride spray is useful in hyper-sensitive dentine and the devitalization of pulps. The most effective way to use cold on a sensitive cavity is first to begin with a continuous blast of cold air from a compressed air tank, and as sensation to this subsides, the spray may be directed upon the isolated tooth. If the

cavity be deep or of great area, it should be filled with dry cotton before the spray is applied. Most sensitive labial and buccal cavities may be controlled by this means. There is always some danger of setting up such a congestion in the pulp that it may not recover. Ethyl chloride spray on an anterior tooth where the pulp is partly dead and painful to touch will work wonders, or if the pulp is to be removed from a sound tooth ethyl chloride will desensitize the dentine and the cocaine pressure method may be used on the pulp when it is reached.

Cocaine or some of its derivatives (or synthetic preparations eliminating the toxic elements) stands to-day as the only efficient local anesthetic for injection. Cocaine stands at the head of the list in efficiency, but with this comes its pronounced toxicity. Many deaths have been recorded from the injection of cocaine, and to overcome this objection eucaine, stovain and novocaine have been substituted. These latter are much less efficient, but are from three to six times less toxic. Cocaine has been used as high as ten per cent. for injection, but in recent years two per cent. is most commonly used. A recent means of reducing the toxicity of cocaine and also increasing its efficiency with the same quantity of the drug, is to add adrenaline chloride. It is claimed that the adrenaline chloride contracts the arterioles, and thus prevents the cocaine from being rapidly carried into the general circulation. Besides, the duration of the anesthesia is prolonged. If three or four drops of a 1 in a 1,000 adrenalin chloride solution be added to 20 to 30 drops of a two per cent. solution of novocaine, the least toxic of these anesthetics, and injected into the tissues about the apex of a tooth or deeply into the interproximal space on each side, there will be such a profound effect on the pulp and dentine of the tooth that the dentine may be cut or the pulp removed without pain. This method of treating sensitive dentine is very satisfactory in trimming a tooth with a living pulp for the reception of a jacket crown. Personally, I have found great satisfaction where I thought the operation demanded the responsibilities of the injection. Cocaine injected into the dentine of a tooth with a powerful syringe gives certain results both on the dentine and the pulp. It has been more recently shown by Tuller and Miller that the force required to produce local anesthesia of the dentine need not be so great as that produced from a syringe. Tuller, of Chicago, has been using for some time rubber cups, in which is placed the solution of cocaine, and this placed over the tooth with the exposed dentine and pressed, thus confining the cocaine and gradually forcing it into the dentine. He has been able to grind down teeth for crowns without pain. Miller recently suggested taking an impression of a sensitive cavity in compound, and then putting a solution of cocaine into the cavity, and over the impression place rubber dam, and with this squeeze the cocaine into the dentine. Cocaine solutions pressed into exposed pulps bring about certain anesthesia. The

method is well known to all, but there is a danger in its use that has caused some anxiety to the operator and discomfort to the patient. If an excessive amount of the drug be forced into the tissues, general toxic effects may supervene, or local paralysis of the area of the distribution of the nerves. These local paralyses soon pass away, but there is such a profound intoxication of the tissues at the apex that they do not recover vitality, and the tooth becomes sore to touch, and may take weeks to recover. If the pulp is infected, as often occurs, or has a local pus formation on its horns, and cocaine pressure is used, the pus may be forced through the apex and a severe pericementitis set up. It is better to use carbolic acid as an anesthetic in all infected cases, either alone or with cocaine.

Authorities seem to agree that it is impossible to know whether a given patient will bear cocaine well or not. A patient who bears cocaine well to-day may succumb to it to-morrow. It has been noted that patients who have been worried, sleepless and hungry bear cocaine but poorly. Some operators will not inject cocaine unless the patient has had his regular meals and has not been recently overwrought. Coffee given shortly before an injection is said to be of great advantage. Volusum is said to be a specific for the toxicity of cocaine.

There are a few local anesthetics which are used in the relief of sensitive dentine which have recognized value. Among these are carbolic acid, oil of cloves, campho phenique, thymo phonique and thymol. These drugs relieve the pain in a tooth with recently exposed dentine much in the same way that linseed oil relieves the pain of a burn or an abraded skin. It protects the exposed nerve filaments from stimulation by the air or by cold. If many sensitive cavities appear in the same mouth their sensitivity may be much relieved by removing the loose decay and washing them out with a stream of tepid water and inserting a filling of equal parts of oxide of zinc and thymol crystals, using as a liquid, sulphate of zinc. This is one of the most satisfactory materials for holding dressing in cavities that we possess. Dr. Harold Clark suggests using the commercial oxide of zinc and five drops of a saturated solution of boracic acid to the ounce to control the rapidity of setting. The sulphate and oxide of zinc will set so rapidly that it is useless, but when boracic acid solution is added to the sulphate solution it may be gauged to set at any desired rapidity. This cement is clean, easy to handle, sets hard enough to last even weeks, has an antiseptic and non-irritating property, and is easily removed.

Carbolic acid will relieve sensitive dentine in shallow cavities by heating it. If a pledget of cotton saturated with carbolic is placed in the cavity and a large hot instrument placed against it several times, the tissue will be less sensitive to cut. The instrument should be hot enough to make the moist cotton sizzle. Not infrequently root canals are sensitive, even though the pulp be all

dead and removed. This sensation comes from prolongation of nerves from the peridental membrane to the pulp cavity. Many such sensitive root canals are sometimes found in the same patient. I have often mistaken the condition for remaining vitality of the pulp and applied more arsenic, only to find the sensitiveness remaining, or complete destruction of the peridental membrane. I have tried sulphuric acid, nitric acid, chloride of zinc with doubtful results, but have found success with one application of carbolic acid after failure with other agents. In this connection it might not be out of place to discuss cauterants, which are used to destroy or digest remaining pulp tissue in a root canal. These agents can hardly be called anesthetics, but their discussion may come in satisfactorily just now.

During the past year the Odontological Club, of Toronto, conducted some experiments to illustrate as far as possible the relative efficacy of many of the agents used to digest pulp tissue. In two or three series of experiments beef fascia was stretched over a glass jar and the agents dropped upon the membrane, and the time compared that each took to penetrate the tissue. This same experiment was repeated, with the addition of gently rubbing the tissue with a smooth instrument. These experiments showed by both methods that sulphuric acid and nitric acid were the most penetrating. Glass tubes were packed tightly with beef, and an equal number of drops of carbolic, sulphuric acid, nitric acid, zinc chloride, nitrate of silver, hydrochloric acid, formaldehyde and tri-kresol, caustic soda, caustic potash, chromate of potash dropped into each. After making many tests it was found that sulphuric acid and nitric acid were about equal, nitrate of silver, hydrochloric acid, zinc chloride, chromate of potash and carbolic acid came in about the order mentioned. It would seem from our experiments that either sulphuric acid or nitric acid will most readily penetrate dead pulp tissue in a fine root canal. Other cauterants seem to either lose their penetrating power sooner or hinder their own permeation by a coagulum.

Another series of experiments was conducted to find out, if possible, what agents were the most effective in relieving sensitive necks of teeth. While this work was not completed, it would seem to indicate that those agents are most efficient which do not dissolve the tooth tissue. Among these are nitrate of silver and strong solutions of formaldehyde. The alkalis were slow in action and the effect of short duration.

The dental surgeon is next interested in sterilizers, disinfectants, antiseptics and asepsis. The intelligent use of these agents is based on pathology, bacteriology and therapeutic or their physiological action.

The surgeon's first aim in undertaking an operation is to avoid bringing any new infection to the seat of the operation. With this in view, he must sterilize all appliances used in the field of operation—hands, clothing, instruments and appliances. The

dentist finds that to do this he must have a somewhat uniform method for all, or there is a waste of time. Boiling the instruments is fairly certain, but there are appliances which cannot be boiled, hence, dependence must be put in some other form of sterilization. Solutions of drugs which will not poison or burn the tissues, and have no odor, are the most suitable for this purpose. The drugs which fulfil all these requirements are too slow in action. The hands cannot be sterilized and kept so for any length of time, but they may be made fairly clean by a thorough washing and scrubbing with green soap and then bathed in alcohol or two per cent. solution of permanganate of potash. After making numerous experiments with most of the drugs for sterilization of instruments, we have found that from a two to five per cent. solution of formaldehyde in water to be the most certain and requires the shortest time. This solution will rust instruments very rapidly unless borax is added to it. An ounce to the pint of solution is sufficient. This solution will sterilize instruments in five minutes. Formaldehyde is an irritating drug, and must be wiped off the instruments before they are used. We found solutions of carbolic acid, lysol and many others to be expensive and slow in action. Dr. Harlan last autumn brought forward the idea that instruments immersed in water contained in a copper pan would sterilize instruments. He gave what seemed to be a lame test for its efficacy. An instrument supposed to be infected with pus organisms was so sterilized, and then inserted into his assistant's hand without any untoward effects. Such a foundation is too weak to build any structure upon. Dr. Banshalf of Milwaukee has shown Dr. Harlan's plan of sterilization to be entirely useless. The field of dental operations, when exposed through the rubber dam, may be sterilized with powerful drugs such as pure carbolic acid, bichloride, one in five hundred, five per cent. formaldehyde.

The disinfection of infected or putrescent conditions in the mouth is a much more complicated process than the sterilization of inert substances. The drugs which are the most efficient destroyers of life are generally the best disinfectants. This power to destroy micro-organic life will also destroy cell life in the human body. There was a time when the surgeon's only thought was to destroy micro-organisms by drugs, not realizing that they also destroyed the cellular elements of repair. Disinfectants are only useful so long as they assist nature to recovery. The dental profession has not yet passed through the stage of complete dependence in strong medicines. Strong medicines, which are tissue destroyers; the lancet and the curette are of the same class. No surgeon would think of curretting an abscess cavity every day, and yet have we seen patients treated every day with strong drugs to cure an infected cavity. If an infected cavity is curretted or thoroughly cauterized once, the pressure anemic which hindered the pouring out of white cells and plastic exudate into the infected

area is relieved and nature's method of repair can proceed, but if the cavity is cauterized again and again the new cells will be destroyed. Applying these facts to the treatment of the so-called blind abscess or the chronic abscess with a fistula, there should be at the first or second setting a thorough removal of the infected area about the abscess cavity. This may be done with the curette or cauterant. Generally speaking, all that is necessary for a successful treatment of a recently developed abscess with a fistula is to first wash through the tooth and fistula some cassia or peppermint water, followed with pure carbolic acid. Seal the cavity in the tooth, and at a subsequent sitting the root may be filled. In those cases which have lasted some time and there is a possibility of there being dead bone present, this should be removed at once. The secret of success depends on a knowledge of the exact pathological condition present, and the use of such drugs or measures as will correct those conditions at once and then assist nature with mild antiseptics, such as peppermint or cassia water, in which is placed salt. The more we know of pathology, the fewer drugs we need.

There has been a distinct advance made during the past few years in the treatment of putrescent conditions of root canals. It is impossible to enter fine root canals and thoroughly clean them. In consequence of this a drug must be selected which will penetrate fine canals without causing pressure, which might force the contents through the end of the root and set up an acute infection or inflammation. The essential oils have been depended upon to do this, but their vapors often discolored a tooth, and were of slow disinfecting power. The drug which has supplanted the oils for such purposes is so irritating and causes such an acute inflammation when in contact with living structures that at first it was not taken up as readily as its merits demanded. To Dr. Buckley, of Chicago, is due the credit of introducing this drug, and so harnessing its irritating properties as to make it almost indispensable. The object is to have the gas of the formaldehyde given off but slowly. To do this it may be used in a crystalline form or mixed with oxide of zinc. Tri-kreasol is added to the formaldehyde to increase its permanency and also to hinder its rapid giving off of the vapors. Equal parts of solution of tri-kreasol and formaldehyde is the most useful combination. Knowing the characteristics of these drugs, it is clear that its chief place is treating infected canals, not as an application to the soft tissues unless an irritating cauterant is desired. Many dentists are using these drugs for every kind of treatment, and consequently making numerous lame teeth. Oxa para, abconquor, abseesene and all the rest of them depend upon the formaldehyde for their efficacy, and must be used with some precautions. I have seen cases of simple devitalization treated with these drugs until the teeth were lost from poisoning, and not from a suspected infection.

Another feature of dental medicine has been overdone. We have taught the public that decay of teeth is caused by micro-organisms. Manufacturers, taking advantage of this statement, have made barrels of mouth washes, which they claim to be disinfectants or antiseptics. We know that the public are being taught to depend on these nostrums to prevent decay of teeth, instead of upon mechanical cleanliness. As this subject was before the society once before this year, I need say no more.

You have asked me to discuss dental medicines, and I fear I have shown the usefulness of but a few, and combated them as a whole.

Dominion Dental Journal

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All Communications relating to the Business Department of the Journal must be addressed to THE NESBITT PUBLISHING COMPANY, Limited, 44 Adelaide Street West, Toronto, Canada.

VOL. XIX

TORONTO, JUNE, 1907.

No. 6.

IMPORTANT DECISION BY JUDGE SNYDER.

Judge Snyder, of Hamilton, decides that a dentist's advertisements are in the nature of a contract with those seeking his services. Drs. Coverhill and Kinsman, who are the hirelings of a promoter of dental parlors in Ontario, attempted to extract a tooth for a Hamilton barber, but failed. They acted on the idea that it was good practise not to attempt to remove a fragment of a fractured root of a tooth. However, the patient went to another dentist to have the tooth removed. These dentists who lend their names and licenses to protect a man who knows nothing of dentistry, must accept his notions of how to advertise. The advertisement on the building says they do painless dentistry. The patient in question did not have painless dentistry performed and claimed two hundred dollars damages. Judge Snyder assessed the damages at sixty-five dollars, stating that by the advertisement the owner made a contract which he did not fulfil. If all other kinds of untruthful advertisements were stopped, or even this one, the public might escape many misfortunes and much loss of money.

JUDGMENT.

JUDGE SNIDER,—I am prepared to give judgment in this matter, subject to the correction of the position of the plaintiff as an infant without a next friend. I will state my judgment now, provided that objection can be got over, because as it stands, unless I can allow an order to be made at this stage to change his position, I think the objection is fatal, and the action would have to be dismissed on the terms set out in the practise. Subject to that objection, which I will dispose of this afternoon, I will state the conclusion I have come to.

I have made up my mind from all the evidence that if these young men who performed this operation had been practising for themselves somewhere in the ordinary way, and had treated this patient as he has been treated, I would have held and would have felt it my duty to hold that an action against them cannot lie. I should consider that in the treatment of this case they have shown the skill that one would expect from young men fresh from their studies and the lack of judgment that comes only by years of experience. I would, therefore, have said that this defendant, who performed the operation, had not been guilty of any such gross breach of the well recognized course to be pursued in such cases as would indicate a lack of reasonable skill. Nor would I think that anything had been shown before me that he was careless or negligent, or that he was not trying to do what he should have done. I do not think it was treated to the very best advantage, I do not think all was done that a man of more mature experience would have done; perhaps a man with more mature experience would have got that tooth out, and the same man in the earlier part of his practise would not have done so. In other words, I do not think a young man with the amount of experience shown here, if he were practising for himself alone, would have been guilty of malpractice or liable for anything that he failed to do or did in this case. I do think that there was lack of experience, or a lack, perhaps, of the judgment which a man of maturer years might have brought to bear, and possibly it could have been got out by such a man, but I do not think this is actionable. I think that he did exhibit the amount of skill that the training school had given him and that he paid such attention to it as his experience led him to do, and that it was not improper attention to it.

In this case, however, that is presented to me, there was an advertisement on this building, occupied by the defendants, which, I think, gave the plaintiff the right to expect that by going to this place he would receive not ordinary skill at all, but that this man who had this place (not a dentist at all, but a man who apparently farms out dentists), had there men who possessed an amount of skill not possessed by ordinary dentists; that he could save people from that experience and dread which every-

body is known to have of a dental operation, by performing it in some way without the pain that all other dentists would give, and that he had there some new method that was not in the hands of other people, I think he held that out. I think that advertisement was used by, and it certainly must be the advertisement of, an unprofessional dentist in this case because it is a fake and intended to deceive those requiring the assistance of dentists, and I think it would and did deceive this young man, and I suppose many others, too, but it deceived him and led him to submit himself to the hands of the young and inexperienced dentists that this man had hired to carry out his plan; but from the evidence he has suffered much more than a reasonable amount of pain before he got through with this, much more pain than the average, and greater pain than a dentist of larger experience would have caused him to suffer. He provided these men of inferior skill, men perhaps of skill, but lacking in experience, young men who are willing to take what he will give them. I do not think that I can find that the defendants, the two dentists, were guilty of malpractice. I do not find that there is any actionable case on that branch. I have made it clear what I do think about it.

I do think, however, that these young men, while I shall dismiss the action as against them, have permitted themselves to be made use of by this man who is trading under the profession that they have, and that disentitles them to the sympathy of the Court, they know their conduct is deceptive, they even smile when they speak of it, they know it is intended to deceive, and they know it does deceive and, therefore, while I dismiss this action as against them, it is without costs. I will allow no costs to the defendants.

As against the other man, James Henery, who is the real proprietor of these offices, I think that he contracted with this plaintiff by his advertisement, because he undertook to have his tooth removed without pain, and I think the contract is perfect. He did deceive him to the plaintiff's great tribulation and loss, not so much of money, but of comfort and peace; he suffered a great deal of pain. I think he should be forced to pay for his misrepresentation, and I will let some other Court say that he can practice that deception on people and not pay for it; but, as far as I am concerned, I say that he is liable for the damage and find judgment against him for that branch of the case. I will assess the damages against him at \$65 and costs.

DUTY ON DENTAL GOODS.

When the Minister of Finance brought down the tariff revision in November, 1906, there was no intended change in dental instruments, but the appraisers made a new definition of dental

instruments. Dental instruments have been free and were intended to be free, but for some unknown reason duty was charged on them during the early months following the revision of the tariff. Many dentists privately made representations to the Minister, and the students attending the R.C.D.S. petitioned him to instruct his appraisers that there was no intention to change the definition of what had been classed as dental instruments. Official machinery works slowly, and it was not until the first week of April that the appraisers were instructed to return to the former duties and definitions of dental instruments. If no effort had been made we would still be paying duty on instruments which it is impossible to manufacture here at a profit, and the revenue of which would amount to but little. The worst feature was that students would have been called upon to pay the most of the duty. The profession are indebted to Dr. Gow for the interest and efforts he made to have the duty removed.

DOMINION DENTAL COUNCIL OF CANADA PROFESSIONAL EXAMINATIONS.

The second annual examination, held by the Dominion Dental Council of Canada, commenced June 4th and closed June 10th. Examinations were held in St. John, N.B., Toronto, Ont., Winnipeg, Man., and Calgary, Sask. Seventy-four candidates sat for examination. Sixteen taking the whole examination, the balance taking the primary only. These examinations are held in whatever provinces candidates apply. All candidates write on the same papers at the same time, and all the papers are read by the examiner who sets the questions. His report of the candidates' standing is final. Each candidate must make at least fifty per cent. on each paper, and an average of sixty per cent. on the whole examination, to be accredited a pass. The practical examination consists in the insertion of one gold filling, preparation and filling of one root canal, the construction and insertion of one porcelain inlay, the presentation of one porcelain crown, of one bridge, of one full denture articulated, making diagnosis and suggesting treatment on orthodontia. The presiding examiner grades the practical work, and any candidate getting less than seventy-five per cent. fails. Candidates may take supplemental examinations in subjects in which they have failed, provided they have made two-thirds the papers attempted.

Before a candidate may sit for the council examination he must have, before commencing the study of dentistry, matriculated in the faculty of arts of any provincial university of Canada, or taken the preliminary examination of, or matriculation into, any institution in Great Britain or Canada, recognized for

the purpose of matriculation in medicine or dentistry by the General Medical Council of Great Britain. He must have studied dentistry not less than forty-two months, and attended not less than four courses of seven months each in a dental college recognized by the Council. He must also have a degree from such college. Besides this, he must take declarations of ethical conduct before getting certificate.

The candidate who fulfills the requirements may, on the presentation of his certificate, obtain a license to practice his profession in any part of Canada (except Quebec and British Columbia), without further examinations.

The Council wishes, as far as possible, to have the profession know the scope and the requirements of their examinations, so that every reader of the journal may judge for himself the standing of the examinations and that those outside of Canada may judge of the standing of those holding a D.D.C. certificate. We print in full the examination papers set for the recent examinations:

Physiology, Histology and Bacteriology.—Examiner, Dr. D. Norman Ross.

- 1.—Name the digestive agents and give their principal actions.
- 2.—Explain fully the mechanism of ordinary inspiration and expiration. State the difference between inspired and expired air.
- 3.—Give a brief life history of red and white blood corpuscles.
- 4.—Give the briefest possible answers to the following:
 - (a)—The use of Hb.
 - (b)—Cause of the second sound of the heart.
 - (c)—Essentials of a reflex action.
 - (d)—Functions of the liver.
 - (e)—Cause of the heat of the body.
 - (f)—What constitutes a secretion.
 - (g)—Cause of the coagulation of the blood.
- 5.—Describe briefly the nerve cell.
- 6.—Describe the Parotid Gland.
- 7.—Describe the calcification of the enamel organ and give its chemical composition.
- 8.—Describe the Aorta, medium sized artery, and Thoracic Duct.
- 9.—Define the following terms: Sæpæmia, Septicæmia, pyæmia.
- 10.—Define and explain the term immunity. State the mechanism of immunity.
- 11.—Give your classification of Bacteria.

Anatomy.—Examiner: Dr. J. M. Turnbull.

Eight (8) questions constitute a full paper. All questions of equal value.

- 1.—Describe minutely the Internal Surface of Inferior Maxillary.
(b)—Name in order the muscles attached to the External Surface.
- 2.—Describe the Superior Surface of Sphenoid.
(b)—Name foramina in Greater Wing, and vessels transmitted.
(c)—What muscles are attached to Pterygoid Process?
- 3.—Give detailed description of External Surface of Squamous portion of Temporal.
- 4.—Describe briefly the Atlas.
(b)—What ligaments enter into the Occipito—atlantal articulation.
- 5.—Describe Meckel's ganglion.
(b)—Give its sources of supply.
(c)—Its branches of distribution and parts supplied.
- 6.—Give origin, branches, and points of distribution of Superior Maxillary nerve.
- 7.—Give nerve and blood supply of the tongue.
(b)—Name muscles attached to tongue and give their points of origin.
- 8.—Give the boundary of Submaxillary Triangle.
(b)—What nerves and arteries are contained within it?
- 9.—Name branches of External Carotid artery and describe fully the Internal Maxillary.

Physics, Chemistry and Metallurgy.—Examiner: Dr. H. C. Wetmore.

- 1.—Define: (a) Capillary attraction, absorption, diffusion, osmose.
(b)—Anode, cathode, circuit, electric current, inductive force, electro-motive force.
- 2.—Describe a method by which electricity produces: (a) heat; (b) light; (c) mechanical energy.
- 3.—Define: Spectrum analysis; describe the spectroscope and explain its use in chemical analysis.
- 4.—Give the formula and properties of: hydrochloric acid; (b) sulphuric acid; (c) sulphurous acid, phosphoric acid.
- 5.—Give symbol and method of preparation of Iodine. Write the reaction which occurs in your method of preparation.

- 6.—State and illustrate the law of Multiple proportions; (b) Define chemical affinity and state how it differs from other forces.
- 7.—Explain the use of symbols and formulæ. Give and translate five examples of each.
- 8.—Describe the difference between soldering and welding metals.
(b)—Is a new alloy formed of the metal and solder at the lines of union.
- 9.—Give a method of (a) refining a lot of gold sweepings and filings; (b) separating gold from the platinum.
- 10.—(a)—Give a method of obtaining silver from one of its native ores;
(b)—Give its physical properties and state its most important salt;
(c)—Define its uses in Dentistry.

Orthodontia.—Examiner: Dr. Chas. E. Pearson.

- 1.—Discuss briefly the causes of mal-occlusion.
- 2.—Make diagrams to illustrate the occlusion of the lower first molar and the upper central incisor.

Patient: A female of fourteen years of age, upper arch contracted until the molars and bi-cuspid are in end to end occlusion, with the lowers narrow at the cuspids, laterals in lingual occlusion, centrals protruding, and in torsal occlusion.

In the lower the right 1st molar is gone, the right 2nd molar is tipped forward until there is an end to end occlusion of its disto-buccal cusp with the mesio buccal-cusp of the upper 2nd molar. The bi-cuspid on the right side are in distal occlusion the width of a lower central. On the left side the crown of the 1st molar is gone but the roots remain. The bi-cuspid are in distal occlusion about a quarter of the width of one of them. The 2nd molar is in normal occlusion. The lower incisors are lingual to the upper centrals about one half inch. They have no supra occlusion.

- 3.—What are the probable causes of the conditions described?
- 4.—Illustrate the probable profile under the conditions and show the relation to the normal.

- 5.—Discuss the treatment of the conditions.
- 6.—Describe in detail the distribution of forces and the means of obtaining anchorage in the treatment of the conditions described.
- 7.—A central in a patient of twenty years has been rotated. Give diagram of retaining appliances and state the length of time it should be worn.
- 8.—What precautions are to be observed in order to prevent patients under treatment having any unnecessary pain.

Medicine and Surgery.—Examiner: Dr. Chester N. Abbott.

- 1.—Describe the surgical and medicinal treatment of acute hypertrophy of the gums.
- 2.—Give the clinical history, and describe treatment of ulcerative stomatitis.
- 3.—State the general and local symptoms of acute glossitis from septic infection, and give treatment.
- 4.—Give local and general treatment of an extensive necrosis of the inferior maxilla.
- 5.—Describe local and systematic treatment of an excessive hemorrhage.
 - (a)—Differentiate between venous, arterial, and capillary.
 - (b)—Which form would be likely to prove most stubborn to respond to treatment?
- 6.—What is shock? Give in detail order of treatment of an aggravated syncope.
- 7.—How would you treat a compound fracture of the inferior maxilla?
- 8.—State briefly the oral phenomena of Syphilis and what remedy you would place chief reliance upon.

Prosthetic Dentistry, Crown and Bridge Work.—Examiner: Dr. H. G. Hoare.

Answer any ten questions.

- 1.—Explain what is meant by the three point contact when used in relation to artificial dentures.

- 2.—Give general characteristics of sanguine and mental or nervous temperaments, including detailed description of teeth associated with each.
- 3.—By what considerations are you influenced in the selection of teeth for full edentulous cases?
- 4.—Give carat and gauge of gold and mention the important procedures in the swedging of gold plate for full dentures with vulcanite attachment.
- 5.—Mention three difficult cases to be met in taking full impressions. How may the difficulties be overcome?
- 6.—Describe procedure of taking impressions of partial cases in plaster.
- 7.—Describe the manner in which atmospheric pressure is brought about in the mouth; what is the importance of this condition in relation to prosthetic dentistry?
- 8.—What essential requirements are demanded in dental soldering? Give causes of porcelain facings being checked.
- 9.—(a)—Criticize the use of pure gold as a solder for the metal frame work of porcelain crowns and bridges.
(b)—Give percentages of a suitable platinum solder.
- 10.—Discuss the importance to dental prosthesis of the advent of porcelain for the construction of crowns and bridges.
- 11.—Name five essential points to be considered when contemplating the introduction of a porcelain bridge.
- 12.—Mention ingredients of porcelain "Body" and give brief description and influence of each constituent part.

Operative Dentistry.—Examiner: Dr. C. V. Snelgrove.

- 1.—Name the different methods of gaining space to operate on proximal cavities, and give your opinion of each.
- 2.—In a large buccal cavity with the gum tissue filling it, how would you manage such a case, and prepare cavity for the insertion of gold inlay.
- 3.—What do you understand by extension for prevention? In what classes of cavities would you think extension for prevention necessary?

- 4.—How would you treat at the first sitting:
 - (a)—Pyorrhœa Alveolaris?
 - (b)—Acute Pulpitis?
 - (c)—Chronic Pulpitis?
- 5.—Give the causes, signs, symptoms and treatment of perionitis.
- 6.—Gutta-Percha as filling material.
 - (a)—Where is it indicated?
 - (b)—Give proper method of preparation for insertion.
 - (c)—Give details how to insert it.
- 7.—Give the different methods of anchoring a contour gold filling in an incisor where the incisal angle of the tooth is gone, and state the advantages and disadvantages of each method.
- 8.—Where is hand pressure indicated in the insertion of gold?
- 9.—Give the limitations of Amalgam and detail its proper manipulation.
- 10.—Distinguish between salivary and serumal calculus. Give causes for recession of the gums.

Materia-Medica and Anesthetics.—Examiner: Dr. F. W. Barbour.

- 1.—Define "Materia-Medica." What is an infusion,—a decoction,—a tincture,—a fluid extract?
- 2.—Describe the following methods of medicinal application: epidermatic,—hypodermatic,—inhalation?
- 3.—Opium (a)—Give names and doses of three of its preparations?
Opium (b)—Name and describe its most potent alkaloid, giving two of its preparations?
- 4.—In what two forms is Iodine usually used in connection with oral disease. What is the physiological effect of the preparation used epidermatically? Give dose of its preparation which we may be called upon to use through the stomach?
- 5.—Give doses of following medicines: carbolic acid, tincture nux vomica, fluid extract digitalis, strychnine sulphate, fluid extract ergot?

- 6.—What is the physiological effect of arsenious acid, both applied epidermatically and in medicinal doses through the stomach?
- 7.—Name four disinfectants suitable for dental purposes, describing each and giving estimate of relative sterilizing value?
- 8.—What is the proper preparation of a patient for chloroform anesthesia. What physical conditions contra-indicate its use?
- 9.—Describe the ordinary physiological effect of ether inhalation?
- 10.—Describe the process and effect of nitrous-oxide administration?
- 11.—What is the relative safety of the foregoing anesthetics? Indicate if possible by figures?
- 12.—Give all necessary precautions in connection with the use of the hypodermic syringe, and fluid injected; into mucous membrane?

Pathology and Therapeutics.—Examiner: Dr. A. W. Cogswell.

PATHOLOGY.

- 1.—Define a wound; name the different varieties of wounds; describe the pathology of the healing of wounds.
- 2.—Define caries and necrosis of bone tissues; describe the pathology of caries and necrosis.
- 3.—Describe the pathology of secondary dentine, pulp nodules and calcifications.
- 4.—Describe the pathology of pericementitis.
- 5.—Give the differential diagnosis between pericementitis and pulpitis.
- 6.—Define pyorrhea alveolaris; describe the pathology of pyorrhea alveolaris.

THERAPEUTICS.

- 7.—Describe the general treatment of inflammation.
- 8.—Give the treatment for chronic inflammation of the Antrum of Highmore caused by the root of a decayed or devitalized premolar root penetrating the floor of the cavity.

- 9.—Give the treatment of pericementitis.
- 10.—Name some of irritant causes of pulpitis; give the treatment for pulpitis indicating the conditions in which conservative treatment will be hopeless.
- 11.—Give the treatment for pyorrhea alveolaris.
- 12.—Name the conditions which you consider imperatively indicate extraction of a tooth.

Ethics and Jurisprudence.—Examiner: Dr. F. W. Ryan.

- 1.—Give three (3) good reasons why a dentist should conduct an ethical practice.
- 2.—Give three (3) methods of advertising that are deemed admissible in an ethical practice.
- 3.—What do you consider the most ethical basis of computing fees for professional services.
- 4.—Should a dentist be deemed unethical, who, on principle, refuses to work for charity.
- 5.—What do you understand by the term "ordinary skill" as applied to a dental practitioner.
- 6.—What is the nature of the evidence expected from an expert witness.
- 7.—In a suit for damages, what additional risks are assumed by a dentist who professes to practice as a specialist.
- 8.—Has a patient ground for an action at law, should a licensed dentist refuse to give him ordinary service?

Editorial Notes

DR. J. H. FELL, of Manitowaning, has been appointed Sheriff of Algoma.

DR. G. S. CAESAR, Toronto, has been operated on for gall-stones, and is progressing favorably.

Review

Dental Materia Medica, Therapeutics and Prescription Writing.

By ELI H. LONG, M.D., Professor of Materia Medica and Therapeutics in the Dental Department of the University of Buffalo; Professor of Materia Medica and Therapeutics in the Medical Department of the University of Buffalo; Assistant Attending Physician to the Buffalo General Hospital. Second edition, thoroughly revised and enlarged. Illustrated with seven engravings and eighteen colored diagrams. Published by Lea Brothers & Co., Philadelphia and New York. 1905.

This work has gained for itself an important place among text-books in dentistry. It has been favorably spoken of by many teachers of materia medica throughout this continent. The National Dental Pedagogic Association has commended the work. Part I. takes up drugs and medicines, their constituents and preparations; remedies, their classification and definitions; administration of medicines, and modes of actions. Part II. contains depletives, counter-irritants, escharotics, demulcents, astringents, detergents, antiseptics, bleaching agents, anesthetics, general and local. Part III. General remedies, anesthetics, stimulants and tonics, alteratives, sedatives, eliminatives. Part IV. Prescription writing, abbreviated terms in common use in prescriptions, poisons, poisons and antidotes, index of drugs, and general index.

This work deserves a place in the library of every up-to-date dentist.

Proceedings of Dental Societies

INTERSTATE DENTAL FRATERNITY.

The Board of Governors of the Interstate Dental Fraternity will convene for the annual business meeting of the Order in Minneapolis, Minn., Monday, July 29th, at the West Hotel. The annual banquet will occur during the week, and due notice thereof will be sent to the members as soon as arrangements can be made and the exact date fixed. It is hoped that the Fraternity will meet in large numbers on this occasion.

R. M. SANGER, *National Secretary*,
East Orange, N.J.

DEMONSTRATORS FOR THE ROYAL COLLEGE OF DENTAL SURGEONS.

Applications from Licentiates for positions as Demonstrators during session of 1907-8 of the Royal College of Dental Surgeons will be received up till August 10th, 1907, by the undersigned. Service required, three hours daily, morning or afternoon, or six hours daily, as may be arranged. For particulars apply to J. B. Willmott, Secretary, R.C.D.S., 96 College St., Toronto.

FOR SALE.

The Dental Cosmos, complete set from 1860 to 1900, first 25 volumes bound. Address, "Dentist," 45 King St. East, Hamilton, Ont.

ASSISTANT WANTED.

High-class operator, graduate or student, eligible for Dominion Dental Council. Good salary. Must be temperate and have good references *re* character and experience. F. W. Glasgow, 317 Portage Ave., Winnipeg.

Dominion Dental Journal

VOL. XIX.

TORONTO, JULY, 1907.

No. 7.

Original Communications

ETHICS IN DENTISTRY.

—
BY G. M. HERMISTON, B.A., D.D.S., TORONTO.
—

Delivered before Ontario Dental Society, Feb. 25th, 1907, Toronto.

Mr. President and members of the Ontario Dental Society,—
I have been asked to present to you a paper on "Ethics," the most unpopular subject in our whole curriculum of studies, a subject which has the sympathy of those who do not need it and is scorned and ignored by those who do. I shall not presume to offer you anything new on this time worn subject, but if I can present a few provocative thoughts and suggestions which will actively engage this Society in discussion, profit must and will result.

Ethics has been variously defined, as "The science of the ideal in conduct," "the law of duty," "that law which teaches man his duty towards God, his neighbor and himself," etc., but members of this Society, I wish to say to you that ethics is nothing more nor less than manhood, manhood in its most genuine, noble and true sense.

Written codes of ethics there have been in every language and since remote ages, but the only ethics worth considering is that which is engrossed not on paper but upon the human heart.

Do not understand me as saying that written codes are of no value; as well might one say that the divine truths presented in that most Holy Book are valueless to humanity. What I would say to you is that it is obviously impossible to legislate ethics

into any individual's nature, just as impossible as it would be to legislate religion into his being. Legislation may prevent a man's being unethical, but it will not make him ethical. This condition can only attain from within and not from without.

Individuals there are whom you may never make professionally ethical by legislation even though your codes were framed by a Solomon or a Solon, for we can frame no code that the unscrupulous may not evade in spirit and obey in letter.

Until we as a profession rise to that high plane where one law shall bind all nations, tongues and creeds, and that law shall be the law of universal brotherhood, prejudice and jealousy within and distrust without the profession, will continue to exist.

The ethical members of our profession have long sought to command the respect of the public and the other professions. This is a most noble and worthy ambition, but gentlemen, until our profession has been purged and purified of that unkindly rivalry, jealousy and prejudice which besmirches not only the person at whom it is directly aimed but the whole profession, ourselves included, are we entitled to a generous and wholesome respect and confidence? The love of a manly excellence in all our conduct is the voice of the All Wise bidding us up and up lest we forget our Divine origin and revert to barbarism.

Every member of our profession should be careful to have an available surplus of energy over and above what he spends upon himself and his own interests, to spend for the advancement of his professional brethren, of his neighbors, of his people and of his nation. Imbued with this spirit, individually, we should soon possess ourselves of a truly enviable position.

Let me say to you that there is a tremendous power in character when added to ability. Many individuals think that ability is everything; that talent can accomplish almost anything; but he is a light-weight, no matter how able, who does not add character to his ability; herein lies the germ of our professional success. Your own prosperity in life and the standing of your profession depends upon the goodwill, confidence and sympathy of your clientele. Truth, honesty, fidelity and purity win confidence; let these principles be that invisible capital which, supported with a sound professional knowledge and a wisely directed energy and ambition shall invariably guide you to an enviable position.

He who respects his work so highly and does it so reverently that he cares little what the world thinks of it, is the man about whom the world comes at last to think a great deal.

May I ask you to consider with me at this moment, first, "The ethics of personality or self."

Man's duty in any and every department of life is self-evident and very plain. He who does not give to his chosen vocation

his fullest and most conscientious energy is dwarfing himself, immeasurably dwarfing himself, is reflecting upon the vocation chosen and has failed in a divinely bestowed privilege.

We see two fellow-graduates: one is doing his work in a shiftless, desultory manner, with him his profession is purely a commercialism. He puts no mind into his efforts, no heart into his handiwork.

He is concerned only that the work shall be done and the account settled. There is no character in his work, for there is no character in the worker.

But the other man is putting conscience into his energies, and saying, "I will do this work faithfully and honestly for the human use it is to serve. Besides, it will stand as a testimonial for me forever; it will answer to my name. It will be my autobiography; it will be my confession; it will be myself."

Let no man dare, let no man dare,
To mark on Time's great way,
"No thoroughfare!"

The way to success is always open to honesty, enthusiasm and conscientiousness. These words ring true. Our work is our soul flung forth in form and color to be seen of the whole universe. Do we conceal our deeper selves? No, every one confesses; his work is his confession. It is a testimonial of character written in the open, in large, legible strokes.

"I care not what his temples or his creeds,
One thing holds sure and fast—
That into his fateful heap of days and deeds
The soul of a man is cast."

Our own self, then, demands our supremest and most noble efforts now and always. One owes to the world his best efforts, his noblest achievements, which contribute to the benefit of humanity not because of any financial position to which it may lead him, but because of the true and abiding happiness that will result.

Neither wealth nor fame, nor prominent position, nor all that the world can bestow, have the faintest power to give happiness, for that true and abiding and only possible success that insures happiness is the success of character and integrity.

The dentist's duty to his patients is not less obvious. Will you thoughtfully reflect that a patient in presenting himself for your professional advice and skill is paying you the highest compliment that they may bestow upon you. There is only one course that you may pursue. Nothing less than your truest and

most genuine self must be reflected in your treatment of these patients.

Promptness, despatch, kindness, and firm gentleness should at all times characterize our treatment of our clientele. We require our patients to be punctual and prompt in meeting their appointments; it is no less a duty devolving upon ourselves. Evil habits soon become chronic and difficult to eradicate.

Our operations should always be completed with the utmost despatch consistent with conscientious effort; to delay unnecessarily is to rob our patients of moments which may be as golden as our own.

This spirit of dallying and even of untruthfulness is perhaps no better exemplified than in the treatment of abscessed teeth. When will we learn to be honest and truthful and reveal to patients the true condition of affairs instead of telling them that they have caught cold in the tooth, when nothing can be farther from the truth. Be prompt in your handling of such cases, and if unable to bring about the desired condition be honest enough to admit it.

Be kind to your patients at all times is an injunction which is not only ethical but politic. This demands an equable temper, which you must cultivate assiduously. You will find that no efforts spent in its possession can be too great. It is an asset worth untold millions, for the mastery of yourself gives you the mastery of others. It will enable you to appreciate both the good and the bad things of life; in short, it will confer on you both discretion and prudence.

A firm gentleness is as essential as any of the other characteristics. A wavering disposition at once creates distrust and gives the patient the mastery and our best work is undone. Cultivate for yourself your patients' respect and confidence and your work is both easy and pleasant. This you may win by a gentleness which commands your patients' gratitude and esteem and by a firmness which secures their perfect trust in your professional knowledge and skill.

Make your office at all times model and as nearly as possible ideal in all its appointments.

The reception room should be first restful and exceedingly attractive. This does not necessarily mean that the furnishings must be luxuriously expensive; on the contrary nowhere should tasteful modesty more eloquently assert itself. Let your reading matter be an indication of the refinement and wholesome character of its owner.

The operating room shall be immaculate in its every detail. There shall not be anything that may in the least diminish the trust and respect that the patient has bestowed upon you in presenting themselves. May I further add that there is no more

potent or ethical advertising medium than a well-appointed and well cared for operating room. Patients do admire and appreciate, and should demand an operating room that is cleanly and wholesome looking.

Let neither the reception or operating room be the place for gossip of any type or for frivolous conversation or visiting of patient and operator; there is perhaps nothing which detracts more from a profession or causes the patient to so cheaply estimate our time.

Toward the profession we should at all times extend that charity which we ourselves ever need practiced toward us. No one of us is infallible, therefore let us throw around our confreres' faults the broad mantle of professional charity. Let not petty jealousies and unkind prejudices suffer you to forget that you are required to sustain a professional dignity.

Let this and every dawn of morning be to you as the beginning of life, and let every setting sun be to you as its close. Let every one of these short lives leave its sure record of some kindly thing done for others—some goodly strength or knowledge gained for ourselves.

Be not disgruntled toward other members of your profession, but be always bright and happy. The cheerful individual sees that everywhere the good outbalances the bad and that every seeming evil has its compensating balm. The habit of cheerfulness enables one to transmute apparent misfortune into real blessings. The cheerful man's thought sculptures his face into beauty, touches his manner with grace and is reflected in him with whom we commune either socially or professionally. If we are cheerful and contented all nature smiles with us: the air is softer, the sky clearer, the earth has a brighter green, the trees bear a richer foliage, the flowers are more fragrant, the birds sing more sweetly and the sunshine is more beautiful. All good thought and good action claim a natural alliance with good cheer. Grief, anxiety, and fear are the great enemies of human life. Cheerfulness is their antidote.

Nor must we forget the ethics of language in dentistry.

Nothing more clearly reflects the mental and moral calibre of the professional man than his language. One may learn to use correct professional language and terms even though he will not conduct his practice according to the code of ethics.

There can be no excuse for a profession using "Bowery language," and to this end I choose to refer you to a most excellent paper read before this Society some time ago by Dr. Gowan, in which he does not "Charge a price," "Make a bargain," "Kill a nerve," etc.

And how shall our profession advertise? This has been and is still a vexatious question.

True professional life knows no advertising. This immediately transfers it to the realm of commercialism and makes one sell his productions rather than present his services for a fee.

The defence has been offered by some graduates that the College has set them the example by offering to do cheap work. This is a contemptible and cowardly attack upon their Alma Mater. These same individuals pursuing their course at college demand a full clinic. It has always been the aim of the College to supply this demand and at the same time they have endeavored to be honest and judicious in their choice of clinic material.

But, gentlemen, were the advertisers really sincere it would not be quite so objectionable. Many of their offers, however, to those who have a knowledge of conditions would seem to be most unfair and misleading.

You may put it down as an incontrovertible axiom that "one never gets more than they pay for," either in service or product. The public have not all learned this truth, and some of our profession continue to sell the product of the manufactures which has been supplemented by a little of their energy. On the other hand, the professional man offers his services for a fee, these services being rendered practicable by conjoining them with the manufacturer's product.

I am of the opinion that our professional life has been somewhat besmirched and a bad example presented by allowing manufacturers and supply houses, for a financial consideration, to engage a considerable space on our programme.

I must commend our Programme Committee of this Convention for having decided to allow no dental exhibits at the College during Convention. Anything that is to be exhibited is to be presented as a clinic by some practitioner. This, I say, is very commendable.

The less fortunate, and perhaps some of our young practitioners, will say that they find it absolutely necessary to advertise, that they must live. Yes, it is necessary to live, to live forever, and he who would win for himself an enduring name must do full justice to himself and his fellow creatures. Can and do the advertising members of our profession do this?

Horatius at the bridge proved conclusively to all ages that in the narrow view of life it is not necessary to live, but he also demonstrated that in presenting himself for his people he has lived for ever.

Do some say that these are ideals to which we may not attain? Ideals are necessary, and we may with a complete and generous manhood advance to them.

The modern tendency is to stand on a pinnacle of fame, preferably financial fame, though one may rattle like a tin drum when hit by adverse circumstances.

What will effect a remedy of these untoward conditions?

Students spend four years in preparing themselves to meet life in all its conditions and are then asked to subscribe to a code of ethics which to them seems to be curtailing their privileges to an unwarranted degree.

It would appear that since it is the desire to have an ethical profession, and that some men will not be made ethical by legislation and are not so by nature, it would be not only wise but just to subject all prospective students of dentistry to a thorough and rigid examination before accepting their matriculation; those who could not subscribe to the requirements of the profession would be apprised of the fact before they had expended either time or money on that particular profession, and then they are privileged to present themselves elsewhere. You would then have done them no injustice and have rid yourselves of this undesirable element.

This would necessitate a change in the by-laws of our College, and while it may appear impracticable at present, it would seem to be the only just and feasible scheme tending toward an ethical profession.

Let us be practical now. We have long enough been attempting to theorize ethics into our professional life which, as has been intimated, with existing conditions is an impossibility with some natures which are too listless and indolent to conduct themselves ethically, for you must all agree that the ethical practitioner is the one who must be constantly alert lest he stumble by the way.

One is compelled to admit that no man can ever be made ethically better by physical or legislative restraint from wrongdoing, but only when he can be made to choose the right and voluntarily resist the wrong. Is not then the discriminating examination before the commencement of the course a practical necessity?

Advertising in its most pronounced form, with its decidedly objectionable and unprofessional features, will be discussed by others.

This grafting of commercialism onto professionalism cannot be too strongly condemned if our purpose is to make our vocation a profession, and yet the general conduct, manner and language of some within and without the office are quite as unprofessional as is the most glaring type of advertising.

"Man is his own star,
And the soul that can render an honest and a perfect man
Commands all light, all influence, all fate;
Nothing to him falls too early or too late;
Our acts our angels are, and good or ill
Those fatal shadows that walk by us so still."

DISCUSSION.

DR. C. A. SNELL (Essex, Ont.).—*Mr. President and Gentlemen*,—Congratulations are due the essayist on his most excellent paper. In his opening sentence he refers to ethics as the most unpopular subject in our whole curriculum of studies. I do not like to think that he is correct in making this statement, for if it were true it would constitute a sad reflection on the dental profession. It would indicate that we are too engrossed in material things to care for the well-being and good character of the profession. If the paper accomplishes the object aimed at, an active discussion, this in itself will tend to disprove the statement.

His definition of ethics as "nothing more nor less than manhood" is terse and complete. No higher compliment can be passed upon us than that which Shakespeare puts into the mouth of Marcus Antonius:

"His life was gentle; and the elements
So mixed in him, that Nature might stand up
And say to all the world, "This was a man."

Genuine manhood is the great thing needed in this and every other profession, for whatever may be the code of ethics, no profession can rise higher than the quality and character of those who represent it. Principle is greater than law, and principle must predominate, or our profession will be dishonored. On the cover of the January number of the *Dental Brief* occurs, not an advertisement of the Parke, Davis Co., but this splendid sentence, "There are men whose lives are such that were all the rules of ethics lost, they could be rewritten from their daily conduct." If the unwritten laws of dental ethics were engraven on our hearts we would have less trouble in deciphering the written. The essayist is right in saying that "the only ethics worth considering is that which is engraved not on paper, but on the human heart." I would go further than he, though, and say that our written code is of little or no value. One writer puts it thus: "A code of ethics telling us how to act seems to me a degradation to the profession. It is an admission to the world at large that dentists would not know how to behave themselves unless it were put down in black and white. It is like inviting a gentleman to dine with one, and then placing by his plate a card telling him how to behave." Somewhere in the South the code of a certain society consists of but nine words, namely: "Every member of this society shall be a gentleman"; while in the American Dental Club of Paris it consists of but three, namely, "The Golden Rule." However, I have no particular quarrel with our written code. It is probably harmless, anyway,

and I say these things simply to emphasize Dr. Hermiston's contention "that you cannot legislate ethics into any individual's nature, that this condition can only attain from within, not from without."

The essayist next makes a plea for our recognition as a profession of the law of Universal Brotherhood. This is a most important point. We must recognize that our attitude toward our confreres largely determines the attitude of the laity toward the profession. Because of this let us prohibit the use of that commercial word "opposition" in referring to other dentists. If our patients make use of it gently correct them. It is too suggestive of conflicting and opposing interests, is unworthy to be applied to a professional brother and is inconsistent with the professional spirit. This law of brotherhood as applied to the profession demands not only that our lives shall not be harmful, but that they should be helpful as well. In various ways we can and should look after the other dentists' interests. Let me illustrate. In looking over the teeth of a patient you discover that a certain filling inserted by the other fellow, and which was perfectly safe at the time of insertion, is now in danger, owing to the wearing of the teeth. Are we going to say nothing about the matter, or are we going to do a little grinding, and so prolong the life of that filling, do the patient a service, and do to the other fellow's filling as we would he would do to our's in a similar position. Ethics and our best manhood demands the latter course.

And so I might go on enumerating and amplifying the many good points brought out in this most excellent paper, but time forbids. He very clearly shows us our duty to our patients, our profession, and ourselves; and it is well, I think, that these things should be reiterated. On the low ground of utility it pays us to do our duty in these respects. It pays to mix character with our work, "doing it faithfully and honestly for the human use it is to serve"; it pays to make our offices as nearly ideal as possible in all their appointments; it pays to extend toward the profession "that charity which we ourselves ever need practiced toward us"; but ethics demands that we do these things and many others not primarily because they pay, although we do not need to lose sight of the fact that they do, but rather from a sense of duty. Somebody has said that "Duty is the only stimulant which does not intoxicate. Duty makes a clear sky over a man in which the skylark of happiness goes singing all the time." That is not only a beautifully expressed sentiment, but it is good common sense as well.

The last point touched in the paper is in some respects the most important of all. I refer to Dr. Hermiston's proposal of a means of making the profession more ethical, by seeking to

eliminate from the candidates presenting themselves for matriculation those likely to prove a hindrance to professional progress. To my mind his position is perfectly sound. "Since," to quote from the paper, "we desire an ethical profession, and since some men will not be made ethical by legislation and are not so by nature, it would be not only wise but just to subject all prospective students of dentistry to a thorough and rigid examination before accepting their matriculation." What could be more logical than that? We demand, and rightly so, a certain intellectual standard. Why not a moral standard as well? There ought to be no serious difficulty in ascertaining a candidate's character, in knowing in a fairly accurate measure whether or not he had the making of a man in him, whether he would prove a detriment or an ornament to the profession. I think that Dr. Hermiston has made a most excellent suggestion, and one which ought to seriously engage the attention of the Board of the College.

DR. E. E. BENNETT.—I was very much interested in the most excellent paper by Dr. Hermiston, and I wish to congratulate him. Dr. Hermiston wrote me a few weeks ago asking me if I would discuss his paper, and in a moment of weakness I consented. On receiving it I found it beyond discussion—it was a case of "Them's my sentiments."

Several points struck me forcibly, and I will enlarge upon a few. "Be a man," Dr. Hermiston said. The laws of the land will not make a man ethical. The ethical idea should be drilled into the young man in his kindergarten age. The ethical idea will influence his college life and last through all his life. The young professional men are exerting a power and influence on professional progress, as you will see from this present gathering, the majority of the members being younger men. Therefore, it is of great importance that they be properly trained in the college, and I think that is one point in favor of the Royal College. It is not owned by a stock company which, to get the greatest number of students, would lower the qualifications and so on just for a convenient consideration, but it is controlled by dentists to improve our chosen profession.

Local dentists' societies are another powerful factor in promoting good fellowship. We have a very good society in our county, and I think if we did not get one idea from our meetings the good fellowship it promotes would alone repay us.

Commercialism has been referred to by Dr. Hermiston. Many have not got their soul in their work. You can read a man's character by his work. With some the operation is hardly completed before they hear the jingle of the dollars in their pockets.

Jealousy has been referred to. We give a hint or a shrug

of the shoulders and use unethical language. How many dentists correct their patients when they speak disparagingly of brother dentists?

Advertising has been referred to. A friend of mine who is attending here noticed when coming down Yonge Street the number of signs of advertising men and he was quite surprised. He thought this was an ideal country, and was a little shocked on finding that condition.

DR. THORNTON.—Where was he from?

DR. BENNETT.—Michigan.

DR. THORNTON.—Had he ever been in Detroit?

DR. BENNETT.—He knew the condition there all right. But he expected a better condition in this country. Ignorance of the fundamental principles of doing right is the only rational explanation that leads a professional man to do wrong in the hope, in this respect, of obtaining success financially. Anything further I might have to say Dr. Hermiston has covered so thoroughly that it is unnecessary for me to pursue the subject further. (Applause.)

WALLACE SECCOMBE, D.D.S. (Toronto).—A very brief definition of ethics would be, "The science which treats of the nature and ground of moral obligation."

Dental ethics is, therefore, a consideration of our moral obligations to ourselves, our profession and our patients; the latter in its broader application, including the obligations of the profession as a whole to the general public. Ethics being merely the "science of duty," it is necessary at the outset for us to decide what our standard shall be by which to measure and to know what our duty is, and while it is difficult to express in language what that standard should be, yet I believe "honesty" in the broadest sense of the word would be a sufficient guide. Let us, then, with such a standard, consider our duty and obligations.

Firstly, to Ourselves.—Time will permit only to touch briefly on this subject. We owe it to ourselves: To charge a fee commensurate with the time and efforts spent in the patient's behalf, not to impair our general health by making office hours too long and hours for exercise and fresh air too short, and to devote attention to interests outside our profession, thus serving our fellow-men, not only as dentists, but as citizens. Our duty to self is important, but self-interests should always be subservient to the best interests of the whole profession, and likewise the interests of the profession should be subservient to the best interests of the public.

In these days, when selfishness seems so general, we must be on our guard lest we get a perverted view, and imagine duty to self as being paramount. Such a view, coupled with a spirit of commercialism, will surely land us in the ranks of the unethical.

Secondly, to our Profession.—A profession might be defined as a group of persons having special knowledge of a certain subject, legalized by the Government, licensed to practice their art, and charge a fee for services rendered.

It is necessary for the Government to appoint men to render such special service, because goods are not being sold that the public may examine, and having examined determine whether to buy or not, and thus men are appointed, who are in honor bound, to advise and render services to the best of their ability, irrespective of money or any other unworthy consideration.

It is this that distinguishes between a business and professional man—the one sells his goods at a price, while the other gives his services, charging what he considers their fair value.

Now, it is quite proper for a merchant to advertise his goods—tell how cheap they are and what good value—but when a professional man advertises his services, telling the people how excellent they are, and how great his ability, he is saying what, if said to a small group of people, would brand him as a braggadocio, and it makes him none the less so because he chooses a newspaper for his mouthpiece and the public at large for his audience. An example of this is found in an advertisement of a Toronto dentist, stating that his is “the only dental office in Toronto where crowns and bridges are always satisfactory.” And another Toronto licentiate, not to be outdone, claims his “work has no superior in Canada.” We are anxiously awaiting the announcement of the man who will have the effrontery to claim superiority over the whole world.

Are these statements true? Are they honest? If they are, then the work done in every other dental office in the country is inferior to that done in these! It cannot be honest to claim that our work is always satisfactory, as that would imply not only infallibility on the part of the operator, but a perfect control over the processes of nature. We are not honest with our fellows of the profession when we make such statements.

There are other licentiates, not being content to claim superiority, are mean enough to malign other dentists. For instance, a Brantford practitioner says, “Would you let any old fellow work with your teeth? You would be foolish if you did,” and a London dentist advertises the failures of other licentiates as follows, “It is the difficult cases we want; where other dentists have failed we succeed.” He mentions no exception.

Such statements are not only discourteous but unfair. To be honest with our fellow practitioners, we must recognize that we all hold the same legal qualifications to practice, and that if there be any difference in our ability, it is for the public to discover. No true gentleman would thus flaunt his own ability and attainments.

A Toronto dentist assails the ethical members of the profession as follows, "Many little uptown dentists try to hold their little practices by misrepresentation and lies."

Now, an advertising dentist should be the last man in the world to point the finger of scorn at the "little uptown dentist." He should be grateful to him, because it is only the latter's sense of honor, compelling him to remain true to his profession, that makes the advertiser's life easy. The advertising dentists in this Province are in the proportion of about 1 to 40. This small group takes advantage of the fact that the others will not advertise, and it is this very protection that makes such unworthy methods possible.

Is it honest and fair to issue such a statement to the public? Are these advertising dentists missionaries? Do they consider the public interest first? Do they feel that the public is being treated unfairly, and their life work is to redress the wrong? I believe that I am safe in saying that the advertising dentist is such because he can make more money than he could in ethical practice, and further, that if he could make more money without advertising, he would cease his present methods.

We should be honest and fair with the profession, and also the profession should recognize its obligations to the individual members. The dental profession owes it to its members to suppress such methods, and if the Board does not act quickly and energetically, we cannot blame dentists who are at present ethical departing from the straight and narrow path, for they naturally argue, If these men can do these things, why not I?

Thirdly, Our Duty to our Patients, and that of the Profession to the Public.—As individuals we all recognize that we have certain obligations toward our patients, but as a profession we have failed to recognize our duties and obligations to the public at large, and it is with this latter I wish to deal.

We have by act of the Legislature been appointed guardian of the people of this Province in so far as their dental interests and dental needs are concerned. We have accepted this charge from the Government, and consequently we are in honor bound to fulfil the consequent obligations. These are many, but I shall deal with only two.

Our Duty to the Poor.—Why should a surgeon perform a necessary operation for a poor man and charge merely a nominal fee (for the same operation a wealthy patient would pay a large fee) any more than a dentist should work for a poor person and give his services for a nominal charge? This is certainly an important duty, and our recognition of it will do much to raise the status of the dental profession.

Our Duty to Protect the Public.—If a licentiate, using as a cloak the good name and high moral standard of our profes-

sion, deceives the public, and by trickery, deceit, humbug or fraud, leads the public to believe they are receiving services, which we know they are not receiving, we must take up the cudgels for the public as against those who deceive. Such a duty will be extremely unpleasant, our motives will be questioned, but let us have the moral courage to do what we believe to be right irrespective of consequences.

Our first duty, perhaps, towards the protection of the public would be to correct a condition whereby men who have no knowledge of dentistry, equip an office, advertise for patients, and employ a licentiate to perform the actual operation. The usual method in such offices is for the employer and owner of the office to dicker (I use the word advisedly) with the patient, and arrange a contract price for the work. Aside from the question as to whether such a one is illegally engaging in the practice of dentistry or not, and the other legal question as to whether a company can practice dentistry when the license is given to an individual, who has not the right to assign it to others, let us consider the position of the public in relation to such offices.

The patient does not necessarily know the name of the operator. The operator's personal liability is, therefore, reduced to the minimum; he endeavors to please the man who employs him—the patient is secondary. In case of malpractice, who is liable? The patient does not know the operator, who could conveniently disappear, and even if the operator were known, he could offer the defence that he was working not for the patient but for someone else—the patient paid him no money. In case of a fraudulent advertisement, who would be responsible? The man who had it inserted, not being a dentist, could not be prosecuted under the act, and the operator could claim total ignorance of the whole matter. After defrauding the public, the name of the company could be conveniently and, if necessary, frequently changed.

The whole thing is morally wrong and, furthermore, I believe it to be legally wrong.

The question naturally follows, What of a remedy?

There is no doubt the Dental Act gives us ample power to discipline any member of the profession, even to the extent of cancelling his license. The Preamble of the By-Laws states that "power is given to the Board to make by-laws, rules and regulations for the government of the College and Board." To this should be added "and the profession of dentistry," as the power to discipline the profession is expressly given in the Act, and failure to mention it in the Preamble of the By-laws only tends to weaken our position.

The whole question resolves itself into one of expediency. We have the power—shall we enforce it?

Personally, I think it would be injudicious at the present time to enforce the Act in cases of unethical conduct from the standpoint merely of the profession. What care our legislators or the public for our injured feelings as individuals, or of the status of the dental profession? Not a whit! But let the dental profession become surcharged with the thought that the public interests are supreme and of first importance, and that it is our first duty to protect the public against any who seek to deceive, and both the Legislature and the public will stand behind us in any action we may take to suppress the wrong.

We have thought too long of our own injured prestige and the lowering of our professional standard. Let us take higher and broader ground and devote our whole energy to the cases where fraud, deception or dishonesty in any form is practiced upon the public, and when we get sufficient evidence of such fraud or deception, cancel or suspend the man's license, and fight the case uncompromisingly to the end.

With regard to licentiates practicing under the name of a company, the Board should pass a by-law, without delay, making it compulsory for every licentiate to practice under his or her own name.

In conclusion, gentlemen, let me urge you to take an active part in the affairs of our country. Let us be public-spirited citizens. The medical profession has twelve members in the Ontario Legislature, and three of these are members of the Cabinet. The dental profession is entirely without representation. There are extenuating circumstances, but in the main the difficulty is that we have been satisfied to spend our lives in a six by eight space, ignoring almost entirely our duty as citizens. We would also be serving our profession, for I believe this group of medical practitioners in the Ontario Legislature is the great buttress of the Medical Act. *We* need a *like* buttress for the Dental Act. Let us get a broader vision, and take a greater interest in public affairs, and we shall not only be serving our country, but will be helping in no small degree to uplift and raise the status of the dental profession.

DR. LOW (Buffalo).—I only wish to have a word to say in the discussion. I read in one of our dental papers that in the great State of Missouri the Supreme Court had held that a corporation had no right to practice dentistry whatever, and I believe that law can be enforced in Canada and in every State of the Union. (Applause.)

DR. LOUGHEAD.—I think this question should be taken more general care of. The present position seems to indicate that something should be done for the purpose of strengthening the hands of the Board and letting them know that if they take any decided position in this matter their hands will be supported by

the profession at large. I would like to make this point. The interests of the College are largely those of the students. From time to time we have a number of students and they put up their good money; they spend three to five years before practicing in the town. Some stand high in their examinations, but are not allowed to practice until they have completed their full period of time. Now I maintain that if the money largely comes from the students that the Board should be authorized to spend any amount necessary to protect those students during the early periods of their practice. They should not be forced to compete with a barber who pays a graduate a sum of money weekly for the purpose of running his business from the operating standpoint. I believe we as dentists should support our Board and give them to understand they should take active measures and draw what money is required from revenue.

DR. THORNTON.—Dr. Seccombe asked a question. He wanted to know if those fellows who advertise are missionaries. I would like to answer by telling him a missionary story. A missionary went to South Africa not long ago and had a friend who had preceded him in that work, and everywhere he went he asked the heads of the tribes, "Do you know John Smith?" But nobody seemed to know John Smith. Finally he came in contact with one man who had been recently converted to Christianity, and he said to him, "Do you know John Smith?" "Do I know John Smith? Well, I helped to eat him!" (Laughter.) That is what these fellows are doing, they are trying to eat the others; but the unfortunate part is we have not got them here. There is a story in the good old Book that tells of the ten men that were cleansed and one only came back to give thanks. Where are the nine? There are 900 or 1,000 dentists practicing in Ontario. Here are the ones; where are the other nines? There is no danger that the men who come here year after year will turn unethical; it is the men who are eating their fellow dentists and gulling the public, and that is one of the facts we have to meet. When our legislators notice the names of the advertising men as they pass up and down Yonge Street they infer the dental profession is largely a trade; the advertisers are the men best known, and the profession of dentistry suffers. When we go before the Legislature it would be well if we could impress upon it that these men do not properly represent the dentists of Ontario.

DR. MCELHENNEY.—I think our essayist must be congratulated on the points of his paper. He need feel no hesitancy whatsoever in criticizing the profession or in running the risk of insulting us deeply, because we need it. We have a little society down in Ottawa, and I think we are rather blessed in Ottawa in that we have very little of the advertising element and affairs

are on as good a basis as, I think, they could be under the circumstances. I think the reason that dentistry is not considered as some of us think it should be, lies in the fact that the majority of the members of the profession of dentistry are not what they should be. It is a new profession and the doors were very easily opened in the past. We know the higher the qualification, the more difficulty in getting into a profession, or into any position that is supposed to carry a certain amount of respectability with it, the higher the class of men who are trying to get into it. And we must admit it. It may hurt our feelings—that is a good thing for us sometimes—but we must admit that we are rated pretty nearly at what our measure really is.

I had a little experience recently, and may refer to it. I had my first experience in the matter of the election in our district. We have 135 members practicing in District No. 1. It matters very little who is the representative, so long as he is a good man and does his duty. But there were 47 votes only cast in the election, 42 of which only were valid. Now, we want to quit congratulating ourselves when out of 135 members only 47 care a rap regarding the politics of dentistry as a profession. That is the proportion of interest which is taken in the matter. Those men do not care a rap. They get through, they get a certain living, and there matters end so far as they are concerned.

Before, in this Society and in others, I have stated that both the public and the profession need education. In legislation I have very little faith. I believe that legislation in this age is considerably overdone, and that as civilization advances legislation should become materially less. It is not a sign of civilization that we should have an immense number of statutes and piles of law books, but a sign of barbarism. The more highly civilized we become the less we appear to be able to get along together. The only remedy, I think, is a systematic attempt on the part of the profession, or by those who are interested in it to that extent, to educate the members of the profession and the public regarding the position which dentistry should occupy. So far as I can see that is the only remedy. There is no remedy in the matter of weeding out those who might possibly become unprofessional by a sort of moral examination. The application of a moral test is a dangerous remedy in any case, because what is moral and what is immoral depends to a great extent on the creeds and predilections of the examiners, and there are members of the profession who might be endeavoring to be worthy members of the profession, but might possibly be disqualified on some moral points. (Laughter.) I mean moral points regarding matters of belief and things of that description. I think the unprofessional men in the long run are weeded out by the public themselves; at least we believe there is sufficient evidence to show that right doing will bring a proper result.

That is one of the beliefs in which we have not all lost faith anyway, that in the long run the good will win out, and we can only wait until that wins out and separates the sheep from the goats to a certain extent.

DR. WEBSTER.—I have given some attention to the subject introduced by Dr. McElhenney, that is, education of the public. There is no more potent way of influencing the dentist for good than by so educating the public that they will not put confidence in the bad. That can be done. There is not any doubt about it. We can show the public what a charlatan is like, so that they will not put any confidence in him. The means of doing it is a difficult question. For over ten years Dr. McElhenney has spoken on this subject, written about it and thought about it, and anybody who has paid any attention to his writings and what he has expressed must agree with him that this is one of the strongest ways of getting rid of the charlatan. Think of it. A man drops at your door step a card saying he will do so and so for you for five dollars. Suppose you place a card at that same doorstep explaining to the patient when he goes down to take advantage of that five dollar offer, to take nothing else, only the five dollar operation. Explain to that patient that he must not pay eight dollars, but five dollars, and five dollars only. That patient is on the right way. When he goes down he sticks to the five dollar operation, but he does not get any operation at that figure, and he goes off somewhere else, because the advertiser cannot do it for him. We could do that if we had the money for it.

I went to Guelph in December on the invitation of the Department of Agriculture, to give an address on this subject. That address will be printed—it has been printed in the *Farmers' Advocate* in extenso—it will be printed and sent out as a bulletin by the Agricultural Department of this Province. (Applause.)

We can give them 1,500 pages of copy and they will distribute it free of charge over this Province. Is it not time we did something? The only salvation we have at this time is the Canadian Oral Prophylactic Association. It is the only opportunity we see. It was organized for that purpose. We intend, gentlemen, to sell to the public tooth and mouth preparations from which we will reap two cents as a royalty from each package. That two cents will be expended for the education of the public. We will also give you something that you know the constituents of, and can recommend to your patient, and then we will have money to do something with.

DR. GREENE:—There is one other point that has been touched upon, but I think it ought to be emphasized. That is the idea of local associations, and the power that they can have on those who are practitioners. I think, perhaps, it is owing to the way we handle those men in Ottawa that we have

not any at the present time. Men came in there and started to advertise the best equipped offices in the city, of course complimenting themselves and giving us a left-handed compliment at the same time. Now, instead of hitting those men, and hitting them hard, we sent the President of our Association round to them and told them that we wanted as brothers of the profession to deal with them fairly. We wanted to be good friends with them; and in every case, so far, those men have yielded and have come in with us. The last man has not attended any of our meetings yet, but he has removed his objectionable advertising, and we expect to have him with us as a member of the Association yet. That can be done by the judicious handling of these men.

DR. McLAUGHLIN.—I am glad you in Ottawa have succeeded so well in dealing with the charlatans there. I may say that Toronto has tried the same methods. Many of our good men have gone to them and received very bright promises, but their acts afterwards spoke so loudly that we could not hear what their promises would have amounted to.

Perhaps Toronto is being struck harder to-day than ever before, but she does not feel it. The little uptown dentist you heard of a little while ago doesn't feel the work of the charlatans half as much as the men of Ottawa and Hamilton to-day or as will the men of some town of 5,000 or 6,000 inhabitants in five or six years from now. I have lived in country towns and have had something to do with the profession of dentistry in country towns. I know if one of these men comes in and is a popular man, and reduces his prices by a half or a quarter, then the farmers in the district and the mechanics in the town will just flock over from the ethical practitioners in six cases out of ten, and much more rapidly than they would do in Toronto, or a large place like Toronto, because they have been taught in Toronto to beware of such advertising and they have had too much experience to be led astray in a great many cases.

I think you are all very well acquainted with the condition of affairs, not merely in Toronto, but in Ottawa, Hamilton and the whole of Ontario. But I think what really interests us and what is worrying a good many of us is what is the real remedy. We have had a great many remedies proposed. We have had a great many theories propounded. We have heard of the effects or the proposed effects of legislation on this matter or of education on this matter. We know this, that legislation has its place and we cannot decry the effects of it. We cannot get along without it, but its effects are only limited. Education is the complement of legislation. If you make use of these two weapons—we have these weapons in our grasp, legislation and education—and leave each one have its own place and each work properly,

I believe we can at least overcome this evil in our midst to a great extent.

Now, at the last meeting of our Toronto Society we had this matter up for discussion before ourselves and before the Board of Directors, whom we were very glad to have with us. The whole matter, so far as we had time, was threshed out and boiled down; it just came to what I stated to you this morning: it is legislation and education. In education we have had the matter very nicely placed before us by the men in the College here. I want to emphasize what Dr. Secombe said, and to congratulate the Board of Directors on the very wise choice they made in electing Dr. Hermiston to that position. The paper he read to us was an ideal one. It was carefully thought out and well written, and it struck a high tone all the way through. I just thought if we could hear in our office such songs as that song of his, such songs ringing in our ears day in and day out, there would not be half the unethical practitioners in Toronto or Ontario to-day that do exist.

When we were talking over the educational part of it I think I made a suggestion, and, if you will pardon me, I will make it again, that Dr. Hermiston cannot do everything, in trying to instil into the minds of the students the high ideals of the profession, ideals which should govern all their future conduct. I hold this, as I said before, that that should be carried into our infirmary, and that the conduct of a student in his dealings with his fellow students before the patients, and the patience and the way he deals with his patients, day in and day out, should be taken into account and marked to the credit or discredit of a student, that they should count in his final examination with just as much importance as would, perhaps, his marks on operating. Some persons say you cannot examine a student as to his morals and as to his ethical standing. We all know that. But you can watch your student day after day and size him up, and with two or three demonstrators doing that I do not think at the end of the term they will be very far astray in all that constitutes the ethical student. I think that should be carried out. I would let the demonstrators at the end of the term pick out this young man and that young man, and perhaps another young man, and put these down as the ones who will very well represent the ideals of the profession in the years that are to come. And if these men will pick out those students who fall short of the standard and say, "We do not believe you have come up to the standard set down ethically for the class or for graduation," perhaps something may be done to lift those students to a higher standing. That is a part of our college work that I think would help us to stop swelling the ranks of the unethical practitioner of the future.

(During the discussion certain advertising cards were passed round for inspection of the members.)

DR. HERMISTON.—I have Dr. Seccombe's consent to ask you to return those ads that have been passed round the room. They were passed round for this reason, that an object lesson of that nature will do much more good with the students than many minutes of talk from me.

I have been referred to as an idealist. I do not deny the charge. I may say that my ideals are so high that I cannot see over or above them. Somebody has said, "Cancel the licenses of these advertising practitioners," and, gentlemen, this has been told you very often by our worthy Dean, that this is impossible. The Legislature would not support you, the courts would not support you, in this action. You have taken the student's three or four years of the best of his life, together with his fees, and graduated him. Because his conduct is not just as laid down in the code of ethics you undertake to cancel his license, and, as I have before intimated, neither the courts nor the Legislature would support you in upholding this action. This is my main reason for suggesting an examination before the student enters upon the study of dentistry. Not that the Board would not make mistakes. They would probably exclude some and admit others, but were such a course taken, you would have then established yourself with the Government and with the courts, so that when those practitioners violated your code of ethics your ground for cancelling their licenses would be much stronger than it at present is.

Dr. Thornton referred to the fact that those who need ethical teaching are always those who are not present. I intimated the same at the outset of my paper in stating that ethics was one of the most unpopular subjects that we had and was ignored by those who needed it. That is true on all occasions, but you cannot overcome that condition by remaining perfectly passive because those men will stay away from Convention. Spread your literature and educate not only the public but those unprofessional men. Education, of course, is one of the factors in establishing our profession on that plane to which we should attain, on the same plane that other professions have reached, and such education must begin early, even before the candidate enters upon the study of dentistry. This establishes my position in asking for that examination. I think your Board are quite intelligent enough, if given the privilege of examining prospective candidates for dentistry, to tell pretty nearly who shall make worthy practitioners and who shall not. The statement was made that the Board up to the present time had done nothing in an endeavor to establish ethics in dentistry. Now, I would like to refute in toto that charge. The Board have done everything within their power, everything that the profession has been, up

to the present time, quite willing to uphold them in. Gentlemen, your Boards, so far as I have been acquainted with them, have been composed of men who have always been worthy of that position. You have shown your confidence in them by electing them to that worthy station, and, as I have said before, the Boards have always been quite willing to pass by-laws tending to the betterment of the profession, if the profession would support them. Just in this connection may be mentioned the fact that education has not been as extensive as it should have been, and I want to say to you now that had the Board taken upon themselves to expend a large amount of money to educate the public I feel that, perhaps, there would have been as strong a protest made by the profession in our annual meetings. I think at the present time the profession is ready to give the Board the privilege of educating the public to the fullest extent.

I was pleased to learn from Dr. Webster that there is a fund being established for the spread of educational literature throughout this Province in the royalty which is being obtained from those oral preparations that are gotten out by this Society. I can only say, in conclusion, that the preparation of this paper has been to me a pleasure and that the results have been much greater to me than they will be to you. (Applause.)

A DISCUSSION OF OBJECTIONAL METHODS IN PRACTICE.

BY A. E. WEBSTER, M.D., D.D.S., TORONTO.

Read before the Toronto Dental Society.

The subject for discussion tonight has engaged the attention of the greatest minds since the organization of men into tribes or communities. Clubs, societies, associations, communities and nations, combined together for the general good, which alone brings the highest individual good. There are always those to be found in every community or club whose instincts are not for the general good, but for the individual good, which is always destructive of the general good and eventually the individual good. These men take no interest in what is for the good of the community; they are parasites. They not only live upon the fruits of the labors of others, but they even set about to destroy those who have made it possible for them to make a living. This is the condition which is staring us in the face as a profession in Ontario. These parasites to-day are not satisfied with making a living out of the labors of others, but they are so short-sighted that they threaten to destroy the very conditions which make their existence possible.

What has the dental profession done to make a dishonest person succeed in it? They had, in the first place, educated themselves and conducted themselves as ethical, refined, honest gentlemen, and appeared in this attitude before the public for so long a time that the public had such confidence in their integrity that they gave them the responsibility of looking after the dental needs of the people. This they did through an act of the Legislature. The public not only gave the care of their mouths into their hands, but they also gave them the power to say who might be permitted to practise dentistry. The public gave us a trust. Have we lived up to that trust when we allow anyone to become a member of our community who does not help to maintain that trust?

Since the public, through its Legislature, has given us this confidence we have aimed to maintain a standard of education, refinement and honesty which has gained the confidence of the public. A dentist is looked upon as a man who is not looking for personal gain in every act, whose word is as good as his bond. He is, in fact, looked upon as a good citizen and a gentleman. This very confidence of the public in the good name and honesty of the dentist is the life of the charlatan. This reputation for honesty has taken years to build, and while only a few play the

quack, they can succeed in deceiving the public, but just so soon as the dentist gets the name of being dishonest, then all must quit. The lightning-rod man and the shoddy-clothes man cannot succeed to-day, because such men have a bad reputation in the public mind. The very name, dentist, will be a warning to the public if the dishonest advertiser has his fling. We have not only given the dishonest dentist a good name, but also protected him from the competition of others of his kind. These, with others, are the reasons for the success of the charlatan in the profession.

Now let us look at what else has brought about our present conditions. In the first place, we have not lived up to our trust to the people by allowing dishonest and incompetent men to get a license to practise. And we have told the public that these men are both moral and competent. I put the question, Who deceived the public first? Let some one answer who knows. These incompetent, dishonest members were told by us that they were both competent and honest, and yet the people would not give them their confidence. This is an easy conclusion for such an one to reach, "The public does not know that I am competent. The best thing I can do is to tell them. I'll do it through the papers, and then they will all know." The competent men who advertise their skill are few, because they find paying for advertisements is a useless expenditure; they have all they can do without it. Incompetency breeds dishonesty. Dentists in this city and others who had failed to get a practice on the merits of their efforts and skill began to advertise; unsuspecting patients came; they appeared to make money; less competent men began advertising. Then it leaked out that the supposed dentist hired men to do his work. A cab driver or bell-boy seeing this, opens an office and runs a dental business. The steps were easily but gracefully taken, until to-day anybody may practise dentistry. And now the fight is on among the advertisers. The ethical practitioner objects to the disgraceful conduct in a professional manner because it lowers his standing as a gentleman. The advertising dentist does not want those who are not dentists to practise dentistry because they may lessen his income. In this the ethical and unethical are on common ground; both object to the uneducated, incompetent layman posing as a professional man and reaping benefits which could only come to him because of the standing of the profession which he has had no part in building, and because he is bound by no moral or ethical standard, as the dentist ought to be. The hireling who is doing the actual operations must do as this uncultivated, uneducated proprietor dictates or lose his position. What is the best for the patient never enters the transaction, no more than in a deal between horse traders. The proprietor

knows no responsibility to the public except what the civil law demands.

A few thoughts on advertising might not be amiss in introducing this subject for discussion. There is no immorality in advertising, provided what is said is the truth; that is, if the advertiser lives up to his advertisements. If he advertises that he will give a patient a Logan crown for \$5.00, then he must do so without further charges. If he do this there is no immorality in it. Whatever the public are led to believe is the meaning of an advertisement is what the advertiser should be willing to do. If anyone present has an idea that the evil of advertising is the low price asked for the work, they are in error, because any combination among dentists or any other body to raise prices or fees is illegal, and might be prosecuted, as the plumbers were a year ago. I venture to state that our dental dealers' position is not any too secure if some one should report their case. Likewise in our own code of ethics there is a statement which admits that there might be an agreement among dentists to raise fees. Such an agreement is illegal, and any reference to it should be at once expunged. The advertising of low fees is not wrong, but if these advertisements are a means of inducing the public to come in, and they are charged higher fees, then there is a wrong committed. This is looking at advertising from a business basis.

There is yet a higher code which should govern the professional man. The educated, the cultivated, the artistic or the true mechanical genius, who, though he makes his living by these attainments, could never in a blatant manner tell the public of his education, culture, artistic and mechanical attainments. The very fact that he could talk of these attainments in public is an assurance that he does not possess them. Only the coarse and vulgar can publicly praise their own refinements and virtues. The services the professions have to offer the public are in the nature of personal attainments, *e.g.*, judgment, skill, art and mechanics. The possessor of these attainments can hardly praise himself. Judgment, skill, honesty, artistic temperament and fine mechanical taste are qualities easily noticed by the public, and need no telling, especially by the possessor. For these reasons it is nothing short of vulgarity or a want of fine feelings for a professional man to advertise.

In this connection it might be well to think of how much of our services are professional. A dentist who puts neither judgment, skill, art or fine mechanics into his work is not a professional man, nor no amount of talk about it or refraining from advertising will make him one. If the good of the patient does not take precedence over his own gain, he is unethical. Those men who advertise their skill have it not, and those who advertise their wares at a price are tradesmen and not dentists, and should not be allowed to practise under that name.

Clinic at the Ontario Dental Society.

AMALGAM INLAY.

BY W. G. L. SPAULDING.

So called because the filling is attached to the tooth substance by a cement union, in addition to the dovetail form.

The materials being plastic, there is no need to sacrifice tooth tissues to form a "draw" cavity.

The cavity is prepared as for gold or amalgam filling, except that, when expedient, mechanical anchorage may be sacrificed, and the cement attachment plus resistance form of cavity be trusted to hold the filling. Resistance form is essential in cavities in which the filling will be subject to stress.

With an approximal cavity prepared and matrix adjusted, mix a medium-setting amalgam, and also a quick-setting cement. Pack enough amalgam into the cavity to cover the matrix wall and adjoining cavity margins, packing firmly and leaving the deeper cavity surfaces uncovered, that the cement may be placed on clean dentine. This first portion of amalgam excludes moisture and prevents cement exposure. Carry the cement to place with a small spatula having a small shank to avoid back-flow, covering deep portions of cavity and the floor of step, if there is one. Finish with amalgam, removing any cement which may squeeze up, from the margins, and complete as you know how.

A Rhein's trimmer ground smooth makes an excellent spatula for such working of cement.

Advantages claimed: 1. Security of a locked plus cemented filling. 2. Complete distribution of attachment to all parts of cavity. 3. Thermo-insulation between filling and sensitive dentine. 4. Avoids darkening tooth with amalgam. 5. Minimizes danger of leaky fillings and secondary caries. 6. Supports weak walls preserved for esthetic reasons.

Reviews

A Text-Book of Dental Pathology and Therapeutics for Students and Practitioners. By HENRY H. BURCHARD, M.D., D.D.S., late special lecturer on Dental Pathology and Therapeutics in the Philadelphia Dental College. Revised by Otto E. Inglis, D.D.S., Professor of Dental Pathology and Therapeutics in the Philadelphia Dental College. Second edition, illustrated with 545 engravings and a colored plate. Published by Lea Brothers & Co., New York and Philadelphia. 1904.

The appearance of a third edition of this standard text-book so soon after the second edition is the indication of its value to the dental profession. The late Dr. Burchard left to the dental profession a monument of his labors and ability. The choice of Dr. Inglis as a successor to Dr. Burchard has been a very happy one; he has revised and brought the third edition up to the most recent teachings in dental pathology and therapeutics. No student nor practitioner can afford to be without this comprehensive work. The printing, binding, illustrations and general get-up of the book are in accord with the publishers' reputation.

Lecture-Notes on Chemistry for Dental Students, including Dental Chemistry of Alloys, Amalgams, etc., such portions of Organic and Physiological Chemistry as have practical bearing on the subject of Dentistry, and Inorganic Qualitative Analysis with specially adapted blowpipe and microscopical tests, and the Chemical Examination of Urine and Saliva. By H. CARLTON-SMITH, PH.B., Austin Teaching Fellow in Dental Chemistry and Physiological Chemistry, of Harvard University Dental School. First edition, first thousand. Published by John Wiley & Sons, New York, and Chapman Hall, Limited, London. 1906.

This complete work of 260 pages is intended for dental students. The author is a teacher in Harvard University and has undertaken to give to dental students in this work a book of sufficient detail to cover all that is required of the dental student. There is often a difference of opinion as to how much theory of chemistry the dental student should undertake to learn. This book gives more attention to the facts of chemistry than all these

underlying principles. It would seem to be rather limited in this scope to give a dental student a very broad grasp of the subject of chemistry. The chapter headings are as follows: Qualitative Analysis, Dental Metallurgy, Volumetric Analysis, Microchemical Analysis, Organic Chemistry, Physiological Chemistry, Digestion, Urine.

The chapter of Physiological Chemistry and Digestion of the Saliva are taken up in this work more fully than can be found in the ordinary text-book of chemistry; also, in the subject of cements, amalgams, gutta-percha and other filling materials are more carefully examined and studied than in even some of the larger text-books on chemistry.

American Pocket Medical Dictionary. Edited by W. A. NEWMAN DORLAND, A.M., M.D., Assistant Obstetrician to the Hospital of the University of Pennsylvania, Fellow of the American Academy of Medicine. Containing the pronunciation and definition of all the principal terms used in medicine and kindred sciences, along with over 60 extensive tables. Fifth edition, revised and enlarged. Philadelphia and London: W. B. Saunders Company. 1907. Canadian agents, Carveth & Co., 434 Yonge Street, Toronto, Canada.

No student or practitioner of medicine can think of getting along without a compact medical dictionary. An encyclopedia is useful as a book of reference, but a small dictionary is indispensable. The dental student cannot expect to succeed in the study of the scientific branches without the aid of a pocket dictionary. It should be his constant companion, both in lecture and study room. This work is very compact and easily carried, though it contains almost six hundred pages. The paper is thin, the type clear, and the cover flexible.

Dominion Dental Journal

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3 COLLEGE STREET

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*All Communications relating to the Business Department of the Journal must be addressed to:
THE NEBBITT PUBLISHING COMPANY, Limited, 44 Adelaide Street West, Toronto, Canada.*

VOL. XIX

TORONTO, JULY, 1907.

No. 7.

THE UNIVERSITY OF TORONTO AND THE R.C.D.S.

The voting paper which was sent out to those licentiates whose fees were paid, asking their opinion as to the advisability of the Board entering into negotiation with the University of Toronto to establish a faculty of Dentistry, resulted in a favorable vote. There were less than 20 votes opposing the proposition. This would indicate that those dentists who are qualified to vote are unhesitatingly in favor of the University establishing a faculty of Dentistry. In general, the proposition is to sell the present college buildings, which are inadequate and poorly adapted for our present needs, to the Hospital Trust, which needs them for the establishment of a department for the care of neurotics; the money obtained from the sale to be invested so as to bring an annual income, which may be spent in original research

and investigation of manufacturers' products offered to the profession.

The University will be required to supply its own building, and teach dentistry in accordance with the demands of the examinations held by the Board and the Dominion Dental Council.

The question has gone far enough for the Board of Governors of the University to appoint a committee to confer with a committee of the Board of Directors of the R. C. D. S. The question is raised at a difficult period in the history of the University, because the President who has just been appointed has not had time to get properly in the saddle. Immediate action is demanded, because the Hospital Trust's offer closes on Jan. 1st, 1908; and the dental school is in urgent need of greater accommodation to carry on its work. Plans for the extension of the present building are all ready, tenders only being held until the settlement of the present situation one way or another.

No arguments are needed to show the desirability of the School of Dentistry becoming a faculty of the University. The only question for the Board to decide is the condition of surrender. The faculty of the School of Dentistry met June the 20th, and expressed its approval of the change, subject to certain conditions: 1st, That the University accept the School as a going concern; that is, the present status of the faculty and the student be not changed. 2nd, That the Board have power to dictate the length of term at college. 3rd, That the interests of Dentistry be safeguarded.

Since the above was written a committee of the Board of Governors of the University of Toronto met a committee of the Board of Directors of the R. C. D. S., July 16th, to discuss in an informal way the establishment of a faculty of dentistry in the University. There were two questions for consideration, the academic and the financial. The University committee agreed that the University might and could teach dentistry. Dentistry had, in their minds, made a place for itself among educated people. The financial question was not so easy to agree upon. The dental committee had in mind the selling of the present building to the hospital trust and investing the money to bring an income which might be used in a part of dental education which is now neglected: investigation of methods of practice and original research. The University committee

seemed strongly in the view that if they were going to take over the teaching they should receive the proceeds of the sale of the building to help to erect more suitable buildings in a better location. They said "if the R.C.D.S. should go on teaching dentistry they would use the present building or the proceeds of its sale and receive no income. And if the University can teach dentistry better than the R.C.D.S. and take the buildings the R.C.D.S. is the gainer." This seems reasonable in one sense, but it also seems reasonable that a board of dentists who have been successfully teaching dentistry since 1875 should like to have some control over the use that should be made of the \$100,000 they hand over. The University committee held the view that the dental department should pay its way, and that if any profits were made they should go into the coffers of the University, even though the dental board gave them the present building. The Governors think that the Dental Board should trust their generosity and fairness in dealing with the dental department. It would seem unreasonable, at first thought, to ask any control over a department after it has once been established by the University, but almost every donation to any institution of learning or charity carries with it certain conditions. In this case it could be hardly called unreasonable to specify—if the dentists gave the University a donation of a hundred thousand dollars and a going concern which has always more than paid its way—that all the surplus in the department of dentistry should be expended for the benefit of dentistry. The University policy is not to enter into any educational scheme for the financial gain that might accrue from it. If this be true, then there should be no objection to the dental board wishing to attach a string to its \$100,000. Nor should there be any desire on the part of the University to help out other departments with money obtained from the dental profession either directly from the Board, or indirectly from the student.

There is no disposition for the Dental Board to distrust the Board of Governors' desire to deal fairly with the dental faculty of the University in asking that the funds they hand over should be expended in a certain direction. The Dental Board has had long experience in dealing with dental needs and thinks their ideas of how the \$100,000 might be spent would fill those needs better than the Governors' ideas. This is surely a pardonable opinion.

Another reason for the Governors not wanting to incur any further expense is the large demand on their funds at the present time. They have asked the legislature to allow them to borrow two millions of dollars to complete and establish the department of physics, the school of forestry, the department of household science, the department of education and the administration buildings.

There is a feature of the present arrangement of the dental school with the University of Toronto which affects the cost of dental education materially, and would still more affect it if a dental faculty were established in the University and expected to pay its way. There are certain subjects taught for the dental school by the University, *e.g.*, physics and anatomy, and under the formation of a faculty, physiology, histology and chemistry would also be taught. The situation is about like this under the present arrangement, or as a faculty expected to pay its way. The dental student does and would pay more for his instruction in the regular departments of the University than other students. At one of the University students' dinners, the Chancellor was reported to have said that the three thousand students of the University paid, all together, about \$175,000 in fees, and the cost of maintenance of the University was \$550,000. Thus the state paid \$375,000 towards the education of 3,000 students, or about \$125 each, while he paid on the average about \$58. The students now in attendance pay about one-third of the cost of their instruction. On this basis how much should the dental student pay for his instruction in physics or anatomy? In 1906 there were 70 dental students taking physics at \$5 each, or in all, \$350. Three hundred and fifty dollars should represent one-third of the cost of the course. The course should then cost the University \$1,150. But as an actual fact, they paid the lecturer \$800 for his whole time for a whole year, while he lectured only two hours a week to the dental students, in all about fifty hours. This is discriminating against the dental student. If any one of these students were attending the department of science, arts, medicine or engineering, the cost would have been about one-third of \$5.00. The course in anatomy is under similar ruling.

The University could hardly argue that because a student is going to use the knowledge he obtains from the study of

chemistry in dentistry, that he should be charged more for it than the arts student, who was not going to use it at all.

The committees are to meet again after the holidays for further discussion of the subject.

PROBLEMS FOR DENTAL BOARDS IN CANADA.

The dental situation in Canada is not without its own difficulties. Both in the United States and Great Britain the leaders of the profession are considering the problems of dental education. Dr. Black, in a paper read before the Illinois State Dental Association, places the number of dentists in practice in the United States at 38,000, and the average number of graduates per year at 2,000. Applying these figures to Canada, we should have (using the last census as a basis) 2,117 dentists in Canada, while there are considerably less than 1,500. We should graduate annually 117 students. In no year have the dental schools of Canada graduated more than eighty students, and during the last year they have graduated less than forty. In the United States there is one dentist for every 2,234 of the population; in Canada, putting the total number of dentists at 1,400, there is one dentist for every 3,571. Thus it is in two countries which are similar in respect of education and nationality, there is a great difference in the number of people consulting dentists. It may be said that in Canada everyone who desires the services of the dentist can have them; the real difference between the two countries being that the people of the United States are better educated in what services a dentist can render. Of the 5,000,000 of people in Canada there are fully 3,500,000 who do not seek the services of a dentist at all, not because they do not need them, but because they do not know what services can be rendered. Assuming that the dentist's services are of value to a part of the community, it is fair to assume that they would be of value to a much larger proportion if the value of these services were generally known. And, as must be admitted, the education of the public in respect to dentistry is in the hands of the dentists. Then it is clear that the dentists must further the education of the public until all of the people who need dental services can

be supplied. It would take fully 5,000 dentists to supply the needs of the people of Canada if they were properly educated.

While there is a rapid increase in the demand by the public for dental services, and also a rapid increase in the population of the Dominion, there is a decrease in the number of young men graduating in dentistry. In British Columbia, where increase of population is rapid, there have been only seven dentists admitted to practice in the past year. In Ontario there are fewer dentists in practice now than there were a year ago, though the demand for dentistry has rapidly increased. In Quebec only eleven were admitted to practice, and of these several left the country. While in the Eastern provinces I have no accurate knowledge, I venture the statement that demands for dentistry are increasing more rapidly than students are admitted to practice.

Young men do not look towards the study of dentistry or any other profession during periods of prosperity, because they can make better livings in other callings. But during these periods of prosperity demands for dental services increase more rapidly than during periods of depression. These causes, added to the unwritten rule that the dental educational institutions of Canada should not allow young men to enter upon the study of dentistry lest they might compete with those in practice and lessen their incomes, has brought about the present situation.

In Great Britain, when the British Dental Association asked for a law to prohibit the practice of dentistry by those who had not passed a qualifying examination, the Government asked if there were enough dentists being graduated from the schools to supply the demands of the people. It was shown that there were not, and as a consequence any one may practice in Great Britain so long as he does not call himself a dentist. If the legislatures of Canada should ask the same question at the present time there might be some loose legislation follow. A total prohibition law, such as exists in Canada, also demands that those getting such privileges as it gives have the responsibility of caring for all the dental demands of the people. It is a very unwise policy to discourage young men from the practice of dentistry while the number entering is not commensurate with the increasing demands. The present policy of the Board of the R. C. D. S., to pass every

student who persists in trying the examination, is not as wise as getting an abundance of young men to enter, and then pass only those eminently qualified.

THE BRITISH COLUMBIA DENTAL ASSOCIATION CRITICIZED.

There has been for some years a belief that the affairs in dental circles in the province beyond the Rockies are not as they should be. The daily press as far east as Montreal has now and then a line or so on dental matters in British Columbia. It is not unusual to hear a layman say that he has heard that the dental examiners in British Columbia examine candidates on subjects not taught in the Eastern dental colleges. The *Vancouver World*, June 14th and 15th, in an editorial, makes statements which it should be required to retract, or the Board should appeal to the legislature for an investigation. The occasion for the criticism of the *World* was the management of the recent examinations. Fourteen candidates wrote; four passed. The editorial says that the fourteen candidates were compelled to work in a laboratory equipped for but one. The conveniences for operating were equally inadequate. The candidates had to write on fifteen papers in two days, and sign their names to their answers, which is always objectionable. No candidate can find out upon what subject or subjects he fails, nor is he allowed a supplemental examination. He must take the whole examination over if he fail. While these features are objectionable to the candidates, they have not the public significance of the statement in the *World*, that the candidates failed because the examiners are not sufficiently informed on modern dentistry to appreciate correct answers; and more, the public have recognized the incompetency of the dentists of British Columbia, and go elsewhere when possible to have their teeth attended.

A Board which is elected to carry out the will of the people should not permit such public criticism to go without refutation. In our last issue appears a set of the examination papers set by the Dominion Dental Council, which is the highest qualifying examination in Canada, and an example of what the examinations are in the East.

THE CANADIAN ORAL PROPHYLACTIC ASSOCIATION.

The dental profession in Canada has been in the defenceless position of recommending tooth and mouth preparations without knowing their constituents or value. About two years ago Dr. A. J. McDonagh and a few friends met and discussed the seriousness of the position in which the profession was placed. Almost daily every dentist is asked what tooth paste or tooth powder or mouth wash he would recommend. There was no reason for recommending one in preference to another of those on the market, except from what meagre information the manufacturers chose to disclose. It was decided at one of these informal meetings to investigate the whole subject, and if possible find out the most suitable preparation and recommend it to the profession. The manufacturers would give no assistance; in fact, the committee was not long at work until it was clear that they could never find out what was in any of the preparations on the market. They then set about to analyze those within reach, and found that nearly all of them contained harmful ingredients, such as sugar, simple syrup, pumice stone, and soaps. This discovery made the situation much more difficult to deal with. It was then decided that the only thing left was to prescribe tooth preparations and have them manufactured according to a given formula. This seemed simple, but was far from it. It was soon found out that few manufacturers knew anything about making tooth preparations, and those who were already making such preparations could see no reason for not recommending theirs. Some of these manufacturers said that it was utterly impossible to make a tooth paste without using sugar or simple syrup as a base. One manufacturer made up pastes for the committee which they expected were according to the formula, but on investigation were found to be three-quarters sugar. After a few of such experiences the committee decided to ask a manufacturer to make the preparation who was not already engaged in the manufacture of any others. It was almost two years from the time the committee began the investigation of the subject until a final agreement was reached with the Instrument and Chemical Company, of Toronto, for the manufacture of mouth preparations in accordance with a given formula.

When it was found that not a mouth preparation on the market could be recommended, and that preparations could not be obtained from some of the more important manufacturers in accordance with the submitted formula, it was decided to form a company of dentists to constantly see after such matters. "The Canadian Oral Prophylactic Association, Limited," was organized, with twenty charter members, who paid into the treasury of the company ten dollars each. With this money the expenses of organization were paid. The membership fee is five dollars, but an extra five dollars was paid by the charter members to cover the initial expenses, and as soon as the funds justify it this five dollars will be returned. The charter members were Drs. Trotter, Mills, W. G. Price, Lennox, A. E. Webster, Broughton, Van Duzer, Gausby, MacLachlan, Day, McGill, J. F. Adams, W. E. Willmott, McDonagh, Paul Secombe, Henderson, G. G. Jordon, Nicholls, Grieve, Loftus, McKenna. The officers elected were: President—A. J. McDonagh; Vice-President—J. Frank Adams; Secretary-Treasurer—W. Cecil Trotter, 412 Bloor Street West, Toronto; and two Councillors—A. E. Webster and (J. B. Willmott).

THE CONSTITUTION.

Name.—The name of the Association shall be known as "The Canadian Oral Prophylactic Association."

Membership.—Any ethical dentist endorsed by the Executive Committee shall be eligible for membership.

Objects.—1. To educate the public to take such measures as will prevent disease.

2. To put on the market preparations of which we know the constituents and which we can conscientiously recommend.

3. To encourage dentists to educate the public and themselves in oral hygiene.

4. To encourage dentists in original research.

Officers.—The officers shall be chosen from members in good standing. There shall be president, vice-president, secretary-treasurer, and two councillors. The officers shall be nominated and elected by ballot without debate at the regular annual meeting of the Association. They shall hold office for one year, or until their successors are elected.

Duties of Officers.—The usual duties of such officers in similar societies. It shall be the duty of the Executive to look after all the business of the Association, and the President shall present a full and audited report to the Association at the annual meeting. The Secretary-Treasurer shall receive, disburse and account for all moneys of the Association. All disbursements shall be made by cheque, signed by the Secretary-Treasurer and countersigned by the President, or by an officer of the Association appointed by him with his power of attorney. The Secretary-Treasurer shall look after all correspondence of the Association and send out notices of meetings, association and executive.

Changes of Constitution.—The Constitution may be altered or amended (a) by a two-thirds vote at any meeting of the shareholders, notice of such alteration or amendment having been sent to each shareholder by the Executive Committee at least ten days before the meeting; or (b) by a unanimous vote of the shareholders at any meeting at which at least fifty per cent. of the shareholders are present.

In the beginning there was no intention of organizing a company, but circumstances compelled it. With the organization of a company, and the responsibility of the manufacture and sale of mouth preparations came the necessity for money.

After long discussions and much consideration, the officers recommended that the organization should collect a royalty from a manufacturer, rather than enter into the manufacture of the preparations and go into general trade. On this basis the officers have entered into an agreement with The Instrument and Chemical Company, of 113 Richmond Street West, Toronto, which gives the company two cents on each tube or package. It is the intention to use the total income, which will be a considerable sum annually, in the education of the profession and the public, as well as in charity.

There has been much self-sacrificing work done in this organization, and if the profession will only do its part there will be two important steps gained: First, Every product turned out will be the best obtainable at the time, and the dentist will know what he is recommending. Second, He will not be asked to recommend preparations in which he is a personal gainer, and will know that any profits accruing from the sales will be ex-

pended in education and charity. Heretofore we have recommended mouth preparations of which we knew nothing, and the profits went to enriching corporations which have done little to benefit either the public or the profession. The good of the public comes first in the minds of The Canadian Oral Prophylactic Association. There is no financial gain to either the officers or the shareholders.

At present the manufacturers are prepared to supply tooth pastes. Tooth powders will be on the market within a month or two; mouth washes and tooth brushes before the year is out. "Hutax" is the name given to all preparations sanctioned by the Association.

DEMONSTRATORS FOR THE ROYAL COLLEGE OF DENTAL SURGEONS.

Applications from Licentiates for positions as Demonstrators during session of 1907-8 of the Royal College of Dental Surgeons will be received up till August 10th, 1907, by the undersigned. Service required, three hours daily, morning or afternoon, or six hours daily, as may be arranged. For particulars apply to J. B. Willmott, Secretary, R.C.D.S., 96 College St., Toronto.

Publishers' Department

EXTRA ATTRACTIONS AT TORONTO FAIR.

The Canadian National Exhibition will be extra strong in special attractions in front of the Grand Stand this year. Among the features already engaged are the Famous Cottrell & Powell in their wonderful equestrian act, which created a tremendous success all over America last year, and was voted by all who saw it undoubtedly one of the most wonderful and attractive outdoor acts ever offered to the public. Another star engagement is that of Thompson's \$150,000 herd of acrobatic, comedy and military Elephants. These monsters play all kinds of games, drill like veteran soldiers, and play various musical instruments with remarkable precision and in a manner that always elicits enthusiastic applause from the audience. Their comedy acts are the marvel of all who see them, and never fail to be received with roars of laughter from old and young. A third stellar attraction is that of Adjie and her Famous Lions. Madame Adjie is recognized all the world over as without peer in the training and education of these wild animals. No man has ever exceeded her in fearlessness and variety of performance. The fourth remarkable entertainment will be offered by Zingarella, Queen of Spiral Ascensionists. This lady ascends and descends an 80-foot winding plank not more than 18 inches wide on a perfectly round ball, and during her progress gives various sword movements and a butterfly dance. By universal consent Zingarella is acknowledged the superior of all and everybody who has attempted this spiral feat. These are only a few of the great list of acts that have been engaged, which includes Miss Lottie Brandon, the human sky rocket, who dashes wildly up and down a chute and leaps a gap on her bicycle. The incline on which Miss Brandon performs this wonderful feat is 100 feet long and 28 inches wide. The programme will be found unusually full of startling acrobatic and aerial acts, with a great proportion of high class humor and rollicking fun.

Dominion Dental Journal

VOL. XIX.

TORONTO, AUGUST, 1907.

No. 8.

Original Communications

ASSISTANTS IN THE DENTAL OFFICE.

BY DR. A. A. S. BURNS, MONTREAL.

Read before Ontario Dental Society, February 25th, 1907, Toronto.

On being asked to prepare a paper on this subject, I, on first glance, was very much in the mood of declining, but on second thought decided that should I succeed in bringing up a general discussion on that "vital" question it would be beneficial to all.

This is truly the age of assistants. It is commonly spoken of as an age of specialists, and from the latter class come the demand for special help in all branches of dentistry. Continuing this research of origin still further, we have an exacting public and a careful operator; hence the effort to avoid even the slightest mistake, all of which gives education, development, the creation of the demand.

As it is a practical subject, and not at all necessary to be carried through the usual wearisome introduction, let us discuss the subject in a practical manner, that is, in a comparative way, classified under the following headings:

1. Girls as Assistants.
2. Nurses as Assistants.
3. Office Boys.
4. Students.
5. Graduate Assistants.

Considering their duties and responsibilities, the kind of assistance each may be best suited for, and the special out-of-place considerations.

The Office Girl.—Never do I introduce this subject without

recalling a very interesting paper in the *Dental Cosmos* about two years ago, entitled "Mary," which states very plainly the many and varied duties Mary has to perform—enough to make most men blush, and yet it is only too true. A good office girl is certainly a treasure.

What constitutes a capable office girl? In the first place, with but very few exceptions, a girl assistant is not likely to be capable unless she takes up this work between the ages of fifteen and eighteen, as very few become truly interested after that period. Taken up at this period, dentistry becomes an interesting and delightful study. There is an attraction about it that removes any of the so-called "drudgery." Never have I known this to fail in any of the cases I have in mind, and I consider the reward quite sufficient to the dentist, when he has been a little more forgiving, a little more painstaking to one in this early apprenticeship.

The various duties of the girl assistant are:

Answers telephone calls, a matter that requires the most careful study in order that the convenient time and general arrangement may be pleasingly impressed upon the prospective patient; sees patients on their presentation; makes appointments; sees to sending out accounts; makes out receipts, and further keeps the record of all operations and charges; in fact, assists at the chair or bench in any way that will facilitate the work and save time. Girls are generally very particular, and can readily discern what is lacking through the operator's carelessness, and quietly correct it. They are more in sympathy with the patient, and often, through their sympathetic, jocular manner, dismiss the patient with but a faint recollection of what he had suffered but a few minutes before.

They are careful in keeping the office clean, particular in arrangement of instruments, towels, napkins, etc., avoiding that which might in any way be displeasing to the most sensitive patient, giving the needy word of consolation, believing in the ability of the operator, and impressing that confidence on those with whom she comes in contact, all of which brings success to that office,—a worth, I fear, too often not recognized to its full remunerative value. The developing of such a capable girl assistant takes years of apprenticeship.

Let me introduce in a word the assistance of a telegraph code in the dentist's office. Any form to suit may be used, but it does away with so much needless talking and interruption at the chair. Take a system of bells from the assistant to the operator: patient or appointment arrives—one bell; 2nd, new patient for examination and appointment calls—two bells. Party calling is on business other than dentistry—card is received and placed in previously arranged place, then three bells announces this information. Operator can quietly investigate name on card without

patient knowing, then by code system can call assistant and give any directions. Call for water for impression, and all such arrangements may be devised, all saving time and annoyance.

The Nurse in the Dental Office.—I would be very likely to place this assistant in the office of the specialist, that is, the office of the orthodontist, the oral surgeon, and perhaps the general extracting office. They are certainly very experienced in relieving the suffering, in guarding against collapse, or any dangerous symptom following a severe operation, but only for such offices as mentioned can any decided favor be given them. True, it is very pleasing to see their trim costume and confidential air at all times in evidence, at the door, in the reception room, at the operating chair; they certainly cause the feeling of neatness in every particular to prevail in the office.

The Office Boy.—Where the dentist has a fair practice, and is able to follow both the chair and the laboratory, the office boy will meet the general requirements. In polishing plates, plaster work of all kinds, delivering messages, urgent calls to dental depot, and, generally speaking, a good assistant providing you keep him busy; but let that boy be idle, and of all the careless, indolent beings one can find, that boy will develop into:

At the chair I do not see that he can compare with the girl assistant, and I think that his idea of neatness, of arrangement, dusting, sweeping, attention to general cleanly details, is not usually fully developed.

Too often he is not encouraged by words of appreciation or proper remuneration. Most boys are in dental offices simply because they are "cheap," and I fully believe the dentist in most cases gets only his proportionate reward.

Students.—Perhaps I may be too "harsh," and forgetful of earlier days when I say the student is a "necessary evil," yet I believe there is much ground for such a statement, chiefly due to the lack of application on the student's part.

There is also a decided disinclination to start at the bottom rung of the ladder. The days of apprenticeship are only to be found in the form which the preceptor has to fill out.

The student will simply not adhere to mastering the little details, and usually wants to make a good crown or bridge after about two months' office duty. A prominent dentist recently stated (and I think in many cases very truly so), that one-half of the students do not know how to mix plaster properly. Overlooking little things, it is only fair to the student to say that now the college course has been extended, he will be more useful to the dentist in the latter part of his studentship, but, on the other hand, is not the public becoming so very exacting that the place of the student in the ordinary dental office is fast passing away?

In other words, can the dentist in all fairness to his practice give the student what his indentures request of him? I am

inclined to think not. Then why not change the plan to some new scheme which might be suggested by a majority of the members of this convention, and give the boy a "fighting chance"? One-half of the students do not see a dental chair to operate at but a very few times from the ending of one college session to the beginning of the next. In many cases they are a kind of "salvage corps" against schemes of the preceptor.

Watching operations, or doing things on theory, does not establish that sympathetic, delicate sense of touch a dentist ought to acquire. Continuous operating is the only way.

Is it time for a change?

It is not to my mind necessary to enumerate the many different ways a student can be of assistance to the dentist. It would simply be a matter of time, as the recollection of your own studentship has not yet died away.

The Graduate Assistant.—To a dentist in delicate health, or one who has different appointed offices, this assistant is of the greatest value.

He may be only engaged as one who desires to extend his studies, under what might be called "an office post-graduate course," or he may be one thoroughly capable in all branches.

In each case the goal is establishment in practice for himself. It is his earnestness to master every detail that makes him useful to his employer and to the calling he has chosen.

I regret to say that too often those of this class, who are open for engagement, have made mistakes which are not of material assistance in character building; in fact, it is for this very reason they are always looking for a position. Many busy dentists have found partners through engaging a graduate assistant.

Such a one takes much of the responsibility, assists in both the operating room and laboratory, at the same time makes friends both in the office and out of it, in a great many cases increasing the practice by mingling with a class of people which the dentist is rather out of touch with, either through age or a close social circle.

The Laboratory.—This is the outgrowth of the busy dentist, and how could we get along without it? Years ago they were almost unknown. Eighteen years ago, if my memory serves me correctly, there were only two such in the city. At this time you could not offer a greater insult to many dentists than to ask them if they sent work to such an institution. If they did, it had to be forwarded under the greatest secrecy and returned as a box of collars or some special brand of tobacco.

How time works out its changes! It is truly wonderful how the dental laboratory can produce such perfect-fitting masterpieces of skilled workmanship, and carry out every suggestion to perfection. I do not believe the dentist who but occasionally sends a piece of work to the dental laboratory gets the best results. The

workman has to study his impression (the method of taking, as regards exactness), his bite, his wire measure, how the piers are ground, what general appearance the work is called upon to carry out—that is, the dentist's ideal—and such minute detail as the occasional sending does not bring out to the perfection required.

If any work is sent to the laboratory, send enough to overcome this and get your system understood. It will then be an exceedingly rare case that will prove unsatisfactory.

In sending work out the dentist is relieved of much that is tiring and likely to produce that "overworked" feeling.

There are one or two points about sending work to the dental laboratory which are not often considered by the dentist.

1st. The placing of direct responsibility upon the workman.

2nd. The great advantage it is to have extra time to spend with the patients, which attention and work suggested builds up many dental practices.

You speak of the extra cost.

How little in advance of material and time if both are carefully figured out!

I hold that the dentist is ahead who sends his work out to competent laboratories.

Enough for the comparative portion of this paper.

In conclusion: I believe that the dentist who has the major portion of his work done at the dental laboratory, and who has a competent girl assistant, gets the best results, and with much less annoyance and a vast amount of pleasure. It is this capable girl assistant that suggests to me an innovation—that is, the establishing of a training-school for girl assistants.

This may be carried out by the college in a special course, having a dentist and a first-class lady assistant as instructors, giving instruction in every branch of which the girl is required to assist in performing.

Perhaps some private institution might take up the work. However, I am fully satisfied that having due care to the character of the students, and being most thorough in the course of training, that all of the graduates would readily find employment, both in Canada and in the United States.

DISCUSSION.

DR. GORDON McLEAN.—The essayist has spoken of all classes except one, namely, the mechanical man in your own laboratory. He speaks of the use of the laboratory to a man in the outside district or in another town, and recommends the sending of work to that laboratory in preference to having a man in your own office. Well, I contend, if you have enough prosthetic work to pay a man ten to fifteen dollars a week, it is better to have that man under your own supervision, to see that work and offer suggestions that he would not be in a position to know of, not seeing

the case in hand. In this way, I think, you would get better work. I also think if your work is outside you are apt to say, "Finish it up and send it down," rather than try it in different stages of completion. If you get a good man and can keep him busy, I think the proper place to have him is in your own laboratory. If you only have a small amount of work, it probably pays to send it to a dental laboratory in town. I imagine, also, that where a large amount of work is coming in from all dentists, there must be considerable rush work, and rush work is never so satisfactory as work you take your time with, no matter how clever a man is, and consequently your refitting and everything else will not be so exact as if he had taken his time over it.

Now, it seems a lady assistant is a very important part of an up-to-date practice. I think a good, smart girl—that is, if she is of neat and tidy appearance, and has a good idea of order, and knows when not to talk (laughter)—is a good thing in an office. I think a little training, a year or so, in medical nursing would be a great benefit, if you could get a girl that had that. Because if you are able to get a girl that has been trained to move quickly and quietly, to see what you want without being asked for it, and has the ideas of cleanliness and order that a medical nurse always has, I think you would have the assistant *par excellence* in your office. Among other things the essayist did not mention, I think she might learn herself to do a little on the typewriter. You could lessen a little of your correspondence work by giving it to her to do, and I think it adds tone, to a certain extent, to have your work done on a typewriter.

The essayist spoke of a school for training lady assistants. I think that is a splendid idea. I do not know whether it could be put on the board here, whether co-education would be a success or not. I am afraid some of the assistants would be leaving before their course was properly completed, not because they intended to follow that course after leaving, but probably—"To get a steady job"). However, I think that is a splendid idea if it is possible at all. The training would eliminate a year or two of the trouble a dentist has. I think that probably for the first six months the training of a girl would take a considerable time, and nowadays in a strenuous practice in a city a man has not an awful lot of time to spare.

As to the students, that is a rather touchy subject when you have a few before you (laughter), but I have to speak from the standpoint of a city practice. I do not think any city practitioner who has been in practice for a number of years and has his appointment book full can do justice to any student if he lives up to his indentures. If he has a practice that keeps him going from nine in the morning to six at night, and gives that student all the practice he is supposed to get, I think that man is a philanthropist. Of course I can only speak of city work. Men

from outside districts will speak for themselves. I do not know how things would be there.

Now, as to graduates. Graduates in a practice are in a certain time of life probably a good thing. When a man is fifty-five or sixty, and thinks about retiring, and wants to give his practice into good hands, then about the time the graduate is going to give notice that he is going to start a few doors off, the practitioner can give up his practice gracefully (laughter). I do not think any graduate starts with a dentist with the idea of staying long. He intends to open for himself sooner or later. When he gets his salary of \$25 to \$50 a week, and sees how much the dentist is making, he says, "He can do that himself," and he gets out. If he is a good dentist and sees the patients, you cannot expect the patients to come to you afterwards, and they will certainly go to him when he leaves you. Consequently I do not think graduates are a good help to one's practice; they are an assistance to lose one's practice (applause).

DR. MARTIN.—We had some experience with lady assistants. We had a young lady, and I may as well tell you here that her name was Minnie Hawkey. We used to call her Minnehaha (laughter). This young lady, when she came to us, I expected would stay at least ten years, but unfortunately she had the universal female weakness for contracting a partnership. At the end of the fifth year she left. We now have a laboratory man, and he is a fine chap every way, and as he is going to be an old bachelor we feel quite at rest with regard to him (laughter).

I do not think the essayist spoke of this assistant—I refer to a bookkeeper. Now, I think that the bookkeeper is an assistant, if we can afford to have him, who is of great assistance. I think a bookkeeper pays himself. We have found it so. We tried it as an experiment, and the experiment proved so satisfactory that we could not do without a bookkeeper. That constitutes our experience.

DR. SECCOMBE.—As the papers are so much along the lines of this subject, do you not think, Mr. President, that it would be wise to have the papers first and leave discussion till afterwards? I think it would be fairer to the men who have the other papers.

THE CHAIRMAN.—The only reason I want to close this paper is that Dr. Burns wants to leave on the train this evening, and I think it better to close this paper before we take up another one.

DR. MCELHENNEY.—At the risk of perpetrating myself too frequently on this meeting, there are one or two points I would like to say a few words on. As to the matter of an office girl, I think that is a necessity, and perhaps the most valuable of those assistants which the dentist can get.

In the matter of an office boy, I am freely willing to say that no office boy would hire with me at \$100 a month. I would not have an office boy round the place under any consideration.

As for the matter of students, I think the time has come for the old-fashioned indenture to be relegated to the ash-barrel (applause). Occasionally the influence of the good practitioner becomes hereditary in the student, but usually all the faults and prejudices and way-back traditions of too many offices are perpetuated in the student. I was very fortunate in a preceptor, much more fortunate than he was in the matter of a student (laughter), so I have nothing but good things to say of him. But I agree with the essayist that no dentist who has what we call a full practice can do justice to the student, and I know that in the matter of my own practice, in which I desire to be the high chief bullyrag (laughter), no student is going to touch one of my patients. Those patients I cannot work for myself will have to go to some place else.

I have never tried a graduate assistant. I may be conservative in my ideas, but I think dentistry is a profession. We come to this college and are taught the various branches of that profession, and we are supposed to be able to perform the various operations which constitute that profession. Therefore I think that we should do that work ourselves to a great extent, and let the people pay for our time.

I have not tried the dental laboratories. I believe they are good institutions. I have nothing to say against them whatsoever, but I cannot see how the highest results can be obtained by those who have not that particular training which goes to make the difference between success and failure in dentistry. They turn out beautiful pieces of jewellery. It is much more beautiful than the work turned out by the dentist himself, but I doubt whether in many cases it has that adaptability which it would have if turned out by the man who tries to do his best in practice.

I think a dentist should be limited by moral law to the amount of work he can honestly turn out himself. If I were going to put in a corps of assistants and all that sort of thing, it would be only to increase my wealth, and I would leave the profession and go and start a departmental store where my financial ability would have a wider field (applause).

DR. PEARSON.—As a member of the Board, I would like rather to clinch this subject of indentures brought up at the present time. I have been very much interested in the indenture student for a good many years, and I have come to the conclusion expressed here to-night. I think this institution is of such technical value that indentures are of no use any longer. Now, in order to have something before the Board, I think it would be wise to take a vote on that matter, because the Board are not in favor of that proposition.

DR. WILLMOTT (received with applause).—I should not voluntarily have raised this question of students, but as it has been

raised, I think we may as well turn it round and look at it from the other side. The purpose of compulsory pupilage was to keep a man who undertook to study dentistry with his attention directed to dentistry during the period of his studentship, and my impression all these years has always been that a student is in a very poor office if he is not doing more to equip himself for the practice of dentistry than if peddling apples or serving at table with his hands behind his back for tips. I cannot consider anything more demoralizing to any man whose aim it is to enter a profession than to spend two or three summers on a steamboat or in an hotel and live principally on tips. That seems to me an absolutely perfect way of making a shyster of a professional man (laughter).

Supposing that we were to do away with the pupils—there might come a time when we will have to, but that time has not come yet. The students in the province of Ontario have no difficulty in getting into fairly good offices. You must remember that the men practising in Ontario to-day are graduates. I told Dr. Barratt, of Buffalo, once—he had been speaking in a very sneering and bounding way, I thought—that I did not feel disposed to class the graduates of the Royal College of Dental Surgeons either as fools or knaves. He was conveying the idea certainly that there was no office where a student would not learn a good deal more evil than good. I have not had that idea of the offices of Ontario. There are a few, but the great bulk of the offices are respectable and conducted on ethical principles. Out of the 850 practitioners we have in the province of Ontario to-day there is a very small percentage against whom you could lay a charge that could reasonably be maintained of unethical practice. Of course, ethical depends on neighborhood. What would not be ethical in Toronto might be ethical in the backwoods.

Suppose we put the matter in another way. Perhaps the practitioner has no use for a student, especially in a country town or country practice. What about the student? Suppose we say we will let the student do just what he pleases in the interim between college sessions. The one thing he knows about, after being at college a couple of years, is dentistry. Where is he going to get some return? In the cheap-John advertising offices, I venture to say, if we had no compulsory pupilage. By the 1st of next June two-thirds of the men would be in an advertising office, getting the largest salary they could get. These men pay better wages than ethical practitioners, and the student, unless he is looking for information, is looking for means to pay his way during the next session, and if he can earn twice as much money by doing any kind of work for an advertising man as he can earn in any other way, he is certainly going to do it. And how much better off is he going to be from an ethical standpoint

than if he were a compulsory pupil in the office of a legitimate and respectable practitioner?

I do not know whether the members of the profession have at all kept track of the change which has been made in the character of indentures. As they used to be they were cast-iron, and I think the time came a year or two ago when it was decided that they should be modified. They were then drawn largely in favor of the practitioner, and the student had not a fair show. As now drawn, they are framed not as indentures but as agreements, and have been so for two or three years. They are subject to cancellation at a month's notice on either side. If the practitioner thinks it advisable, he can give notice at the end of the month; and if the young man thinks he can do better somewhere else, he gives his preceptor notice. There is no hardship, no compulsion, and the only thing the Board have in view is that during the entire pupilage the young man's attention shall be concentrated on dentistry. Suppose you want to make a man an engraver. You want to bear in mind that manipulation in dentistry perhaps requires as perfect a digital practice as engraving, and even as the finest kind of surgery. Supposing he could earn more as a navvy on a railway, how much preparation would that be for engraving or dentistry? It would harden his hands, and it would take a long period for his hands to get back to the condition they were in when he ended the session before. No man that has common sense would think of making an engraver in that way. Dentistry requires an even touch, an absolutely perfect control of the muscles of the fingers. After seven months acquiring facility, suppose he starts out at rough manual labor; it will take three or four months, anyway, to recover his touch; indeed, it is a question whether he will ever get back his delicacy of touch. That explains the object of continuous education in dentistry. There are difficulties and some objections, of course, but I am not by any means convinced that the maximum of advantage to a young man who is going to study dentistry is not in spending his whole time at dentistry until he graduates.

MR. BURNS.—It is true I left out the mechanical man, and probably that kind of assistance may be pretty valuable in the office; but I omitted that, thinking, perhaps, it might be brought up by the outside dentist, that is, a dentist not in the city.

I do not know what Dr. Webster had against me when he presented me with this subject. I thought when I first got this subject it was pretty easy. I started out to think something about it, and I have been thinking a bit ever since, but I do not think I have got much out of it. I could not get any details in journals, books, or anything I had, and was compelled to devise some form of bringing it up, and the mechanical man I had forgotten. I think the mechanical man is a great help, but the difficulty is, there is always somebody stealing him. You have just

nicely got him into your own ways, he is a pretty good man and doing pretty good work, when by and by somebody offers him more money. Perhaps he may be only with that man a month or so, and may be glad to come back to you, but there is that point against him. However, he is a pretty good assistant.

As to the rush work that Dr. McLean has referred to, I claim that if you go to a first-class laboratory, and if the men are conscientious—and there are some—they will not attempt to finish work until they are absolutely satisfied with it, and they will send it to you for trial; and they are even more particular in that respect than a dentist is.

With regard to a lady nurse assistant, it is very hard to interest a nurse who has been in a hospital for a little while in what I would call little details, and there are a great many little things that are absolutely necessary. Of course, with regard to cleanliness of instruments and general arrangement of napkins and towels, and so on, these are quite familiar to a nurse, and this sort of assistant in the reception room may be looked upon favorably in some respects. The arrangement and all like that is fairly good, but the meeting of a nurse at the door of the reception room sometimes sends the idea to a patient, "Well, am I in a hospital or not? Is this operation to be severe? I have feared so, and now I am convinced of it." Of course, the operator would have to overcome that.

The bookkeeper Dr. Martin spoke of, I wish we all had one. I think it is an excellent thing to have a bookkeeper, and it is a more excellent thing to have a large practice for the man, and I certainly congratulate Dr. Robertson and Dr. Martin on the fact that they require a bookkeeper.

Dr. McElhenney brought out some points that were very good. The public laboratories seem to be in such favor nowadays that I do not think we can say anything that would warrant the work being sent there other than just the general favor in which they are regarded by dentists.

With regard to the studentship matter, I am out of this province just now, but I knew there was a little feeling with regard to this, and their indentures, and so on, in most Canadian towns, and I am glad the subject has come up for discussion (applause).

Dr. Harold Clark read a paper on "Convenient Arrangement of Office Equipment."

Dr. C. N. Abbott read paper discussing Dr. Clark's.

Dr. W. C. Trotter's paper on "Business Relations of the Dentist" was read by Dr. Webster, the author having been called away by the illness of his wife.

DR. OLIVER MARTIN.—With regard to the making of money, I think the essayist is right. That should not be our ideal. Our ideal should be service, and I think when the service is properly done the money comes in of itself.

With reference to commercial education, which the essayist thinks it necessary for the professional man to have before entering upon his professional duties in life, I think that he is partly right and partly wrong. I think, perhaps, with reference to the graduate of years ago—and perhaps I may class myself among the number—that they should have some sort of commercial education, because the matriculation standard was then not high enough to give them such a knowledge. This has always been a personal regret with me. But in the case of gentlemen who are now going in for dentistry the matriculation standard is high enough to qualify them on that score; and I do not think they require any more in the way of commercial education, because they very likely got that with their general education. If Dr. Trotter were here I should like to ask him his authority for the gross impracticability of those who are beginning the practice of dentistry. There is no doubt that a great many who have commenced dentistry have proved failures. I have tried to remember some of my own class, but I am sorry to say it is not all through lack of business knowledge, but more through dissolute habits, dissipation in some form or other. Now, in Ottawa—I cannot speak for the whole province—the young men who have recently graduated and started practice there are all doing well. They are showing their ability to look after themselves, and they are getting along on ethical lines, which is a compliment, I think.

Dr. Trotter speaks of the system of life. The outline of this system is to work hard while you are working, and take it easy afterwards. Now, that is all right with some individuals, but I think temperament should be taken into consideration. There are men who have not the make-up to hustle in that way. Besides, high pressure work is like a high tension current, which requires more insulation. We all know it is the forced fire which burns the coal. Another thing, a man works at high pressure all day, and then when the time comes for recreation he is very likely to seek high pressure recreation, and eventually he will have what they call Americanitis, a disease, I think, our neighbors across the line suffer from (laughter).

With regard to outside interests, I believe that a healthy outside interest is beneficial, and I think a hobby, if it is not over-ridden, is a fine thing for a man. Perhaps I should say hobbies. A man should have something outside his profession to divert his mind. In connection with this, original research is a fine thing, and I wish I had the ability and disposition to do that. I think that many of the men who are now graduates will have the advantage in that way that we older men could not command.

With regard to popularity from outside, I have very strong views. I think that the popularity a man receives outside of his profession, by being a member of clubs, and all that sort of thing, is of little value. The popularity that helps is professional status.

If a man does what is right by the people, they are going to hold him in esteem (applause).

With regard to overcrowding, that is bad. We should consider our patients' time just as much as we expect them to consider ours. If you cannot have the work at the time the patient wants you to have it, tell him he cannot have it. You think, perhaps, that won't do, but if you try it it will work. Give your laboratory man time, ample time, give him lots of time.

A thing, I think, very desirable for a busy man to do is to reserve easy operations for the late hours of the day. I make that a practice and find it relieves the stress, and one is not looking with dread to the end of the day because one is not going to run up against a difficult operation. It is quite easy in the city to do that, but with regard to a country practice, of course, I know nothing.

I say it is unwise to leave a patient and go and work on another. As a matter of fact, I have had to leave a patient and run out to have some lunch; but that only happened once, I am glad to say.

With regard to the card system, I have a confession to make. I am sorry to have to make it, but I tried the card system. I was like the man who was asked if he had ever kept a diary. He said, "Yes, I have kept a diary every month of January for the last five years" (laughter). I tried to work the system, but I had not the moral courage to keep at it.

Now, as to saving money. Of course that is a very important subject. We know it is said, that it is not what a man gets that makes him independent; it is what he can do without. I think as a profession we are somewhat improvident.

Saturday afternoons as a holiday are very satisfactory institutions. We started Saturday afternoon in the summer, then we took it all through the winter, and have not found any difference to our practice. I think these holidays each month are not too much for a dentist, at least, basing the results on my own constitution. Of course, there are men who do not require so much, but I require it. One great advantage of a Saturday afternoon holiday is that you can have your office cleaned thoroughly after you leave (laughter).

One thing I do not think the essayist touched upon: we should avoid doing work over. I believe a great many lose time by doing work over. It is made necessary by not doing the work properly in the first place. Do it well instead of having to do it over. Besides, it will make a better impression.

Dr. J. H. Irwin read a paper continuing the discussion.

DR. WEBSTER.—I wish to congratulate the Programme Committee for having got so many good papers on this subject.

DR. CLARK.—There are just two points I would like to speak

on as they have been brought to my mind. First of all, with regard to light. We all know, by looking at a cat's eye, or any person's (laughter), any eye (laughter)—you know how in a dark room, or when the eye is looking away from the source of light, the pupil enlarges and the power to receive light rays is increased. Now, by having the room in which we operate fairly dark, and yet the source of light shining on the mouth pretty strong, we get the best value. Of course, the idea of conveying the light through a tube and having the rest of the room dark would soon lead to ill-health, for the therapeutic value of light is so great. The oldest operators have their operating rooms with a south aspect, where possible.

Again, the other point about plush being unsanitary, and being better replaced by glass. I got the gutta-percha works out here to make me a pretty thick, dense rubber. It is jet black, and if it gets the least soiled you see it at once. It fits into the trays. The trays are not like the trays that you swing out. These trays, although they pull out, won't drop on the floor. Each tray catches, but can be lifted out, and this mat can be scrubbed and sterilized. The instruments look well against it, and can be easily seen and distinguished one from the other, and the rubber avoids two disadvantages of glass, namely, noise and the dulling of the edges if the instruments come against it (applause).

CONVENIENT ARRANGEMENT OF OFFICE EQUIPMENT.

BY HAROLD CLARK, D.D.S., TORONTO.

Read before Ontario Dental Society, February 25th, 1907, Toronto.

The business man's success, however high his business principles, is measured by the profits, dividends, or, in plain words, by the money made. The professional man's success, in the final analysis, is indicated by the character of his professional achievements. The money made may vary with these achievements or it may not. While professional achievement should be a dentist's first ambition, he should not be careless about his earning power; it should claim, at least, secondary attention. And too much importance can hardly be attached to the consideration of anything that will tend to make every hour of work as efficient as possible. Perhaps no profession depends so much upon the strict economy of the very minutes that make our hours of labor; and to this end a well-equipped and conveniently arranged office is most important. I have been asked to discuss this subject from the standpoint of economics, and naturally my remarks will be pretty much a description of my own office and its equipment, and I shall be led to make frequent use of the first personal pronoun.

First of all, I would suggest a detail as to the division of our office space. If at all possible, have a small room, even if it be

no larger than four by six, that opens by one door into the operating room and by another into the waiting room, or, better, into the general corridor. This should be properly equipped with basin, mirror, dressing table, and such conveniences as are found in a dressing room. A hat and cloak tree in the operating room or waiting room will accommodate the wraps of the patient about to take the chair. As soon as the previous patient has gone, the assistant can remove these wraps to the little dressing room. When the operation is finished, the patient goes directly to the little dressing room. If the operation has dishevelled the hair she is spared the embarrassment of facing strangers, or even friends, in the waiting room. Another value of this little room, and quite as important as the former, is the time saved by being able to bring the next patient to the chair without having to wait till the previous patient is ready to leave the office, or while she pursues a conversation you cannot terminate without seeming rude. When the office space does not permit of this room, as is the case in my own suite, a corner of the operating room may be provided with a basin and other equipment, and be closed off by portieres. In this way, the only delay necessary between patients is the time required for the operator to wash his hands.

Were I asked what I regarded as the most indispensable item of my equipment, I should unhesitatingly reply, "My office assistant." A practice must be very small indeed that cannot afford the magic touch of a woman's hand. A mere girl who has just left the public school can soon be trained to do a multitude of things that consume time, and still do them as well as the dentist; and if they are in the nature of housekeeping she will do them better. Only the dentist who employs one, and has had to do without her for a day or two, can know her value. In the arrangement of the operating room I have tried to have everything so placed that while my left hand is engaged at the patient's mouth my right hand may easily reach anything in my whole operating equipment. I have an operating cabinet, a prosthetic cabinet and a recording desk, and these naturally arrange themselves in the arc of a circle, any part of which is easily within the sweep of my right hand. My operating cabinet is one I designed for myself, the special feature of which is the large area afforded by the trays. I have seven trays, each of which may be drawn clear of the body of the cabinet. They afford almost fourteen square feet of surface. More than one dentist who has seen the cabinet has objected to the depth of the trays from front to back. This objection is for me one of their main virtues. I can have two racks in each instrument tray. The one nearest me contains the instruments most commonly used, and the back or farther one contains those less frequently used. No matter how seldom required, the place of any instrument is familiar to the eye, and when needed I have it instantly, and don't have to hunt through several drawers and then ask the assistant if she remembers where

it was put when last used. I have so much tray room that many things that are usually kept hidden away in drawers are ready to hand the instant I need them. Even the stock that is kept in drawers is contained in boxes with the covers removed, so that it is never necessary to take time and both hands in a hunt for something that is needed in a hurry. One tray is almost entirely devoted to all sorts of engine points. When we think of all the different forms and sizes of engine burs, and these multiplied by two for the right-angle and direct hand-pieces; all the sizes and shapes of stones, disks, reamers, etc., some used frequently, others rarely, one can realize the value of an arrangement whereby the instrument most rarely used can be had as instantly as any other. This tray in my cabinet looks like a forest of engine points, all laid out in straight rows; each form of point has a row for itself, with the largest on one end and graduating to the smallest on the other; the most frequently used at the front, the least frequent at the back. I have been in the offices of dentists of rare ability and with good practices, who kept their engine points in two or three pill-boxes, and as each point was needed would hold the box in one hand and with the cotton pliers in the other sort the contents until the desired point came to the top; or, this failing, another hunt for a new point would be made in some drawer, or drawers, among the containers in which we buy the points from the dealer. I have a drawer with nothing else in it but several blocks drilled to contain all my stock of new burs, stones, etc. Each block contains one form of point, and all graduated as to size. The convenience of this is obvious. In another tray I have my excavators, chisels and other sharp edged instruments. These are arranged on two racks, the rack nearest me containing those in most common use, and in a definite order,—spoons before other excavators, large before small, curved before straight, etc. This enables my assistant to return each to an exact place after sterilizing. Another tray contains my pluggers and all instruments associated with gold filling. Still another has plastic instruments and an assortment of miscellaneous long-handled instruments. As far as possible I use cone socket handles, style 10 and 10a. They are octagonal, and do not roll when laid down; not so bulky as to be clumsy, yet large enough to be under perfect control in delicate operations, such as in pyorrhea treatments, etc. Instead of having my electro-pneumatic switchboard on the wall as is usual, I have it supported on one side of the cabinet, and the tubes, cables, etc., pass beneath the cabinet and are delivered on a board at the other side, so that when in use these cables and tubes are not in the way of the trays and drawers. Close beside my operating cabinet I have my prosthetic cabinet. Its general purpose is to minimize the trips to the laboratory. It is made so that one stands to work at it. It is equipped with everything necessary for small solderings, small plaster work, filing, grinding, waxing; in fact, a multitude

of little operations that would otherwise have to be done in the laboratory. It contains a small plaster drawer, and everything necessary for the taking of impressions. It is equipped with an electric motor lathe carrying a universal chuck. With the touch of a button a drill or any instrument may be sharpened in a moment. An engine stone may be trued or cleaned when clogged with amalgam by revolving in the handpiece against the revolving stone of the lathe. A small office bunsen burns all day, and is ready in an instant to heat an instrument, to soften gutta-percha or wax or compound. The economic value of electric appliances is only appreciated by those who have used them. The electric annealer, especially with a rheostat to regulate the heat, produces a quality and uniformity of gold that is only realized when some mishap compels one to resort to some other method of annealing. With a properly constructed water heater the most sensitive cavity may be syringed without the patient suffering in the least from thermal shock. There are many devices for generating a stream of hot or warm air, but I know of none which admits of such delicate heat regulation as an electric resistance under rheostatic control.

Such instruments as cotton pliers, mirrors, explorers, etc., I keep in duplicate, so that while one set is being sterilized the next operation may be gone on with without waiting. Another small but important point that I know is often overlooked by many who try to observe aseptic precautions,—I refer to the waste cotton holder. Could we imagine any better way to transfer infection from one patient to another than to rub the points of our cotton pliers, broaches and other instruments in the accumulated and assorted filth about the mouth of a waste cotton holder? I keep these in duplicate, and one is removed with the instruments after each operation, and is cleaned and sterilized.

In arranging one's medicaments the exercise of a little care and intelligence will accomplish considerable. Select those agents in most common use and have them in the most convenient place. This place for me is in the lowest tray of my operating cabinet. I have two sets of medicament bottles (show samples) screwed to the sides of the lowest tray. With one hand I can remove cover, dip cotton into the medicine, and replace cover with no needless waste of time. Iodine and acids must not be kept in the cabinet, as the steel instruments would be rusted by their fumes. As far as possible, drugs should be contained in glass-stoppered bottles. The wide-necked variety is usually to be preferred, as we so frequently desire to dip in an instrument or syringe point. A stopper that may be inverted when removed from the bottle has an advantage worth considering. Every care should be taken to minimize the characteristic odors of the dental office. A large contributing cause of these odors is the spot that is left every time a stopper is laid wet-end-down from a bottle containing an essential oil or other aromatic. A little care,

with properly formed stoppers, will avoid much of this trouble. One should have a medicine shelf in his laboratory, or some room other than his operating room. On that shelf should be kept large bottles that contain stock quantities of various drugs, such as alcohol, ether, chloroform, carbolic acid, etc., from which smaller quantities are transferred from time to time to the more convenient sized bottles of the operating room; also saturated solutions of such drugs as bicarbonate of soda, sodium dioxide, zinc sulphate, etc.; also discarded medicines, for new uses often arise for them. It is a good plan to take an hour once a month to have a sort of housecleaning through one's operating-room cabinets to remove discarded medicaments and other equipment. It is bound to have some demoralizing influence to have a lot of "dead wood" in one's outfit.

In my cabinet, in one place, and always in that place, I keep my restoratives: lavender salts, aromatic spirits of ammonia, liquor strychnia, amyl nitrite capsules, etc.

Various medicines are used in varying percentages. These agents I keep in full strength solutions. If the desired dilution of one of them be only a few drops for the immediate operation, I prepare it with a minim syringe on a glass slab. By counting the drops the combination or percentage solution is readily made. For larger quantities up to a drachm I use a minim graduate.

These are a few points that in my own practice seem to have made for economy of time by making my hours and minutes more effective. They may not recommend themselves to every one, but if any useful hints have been thrown out, and a discussion provoked that will bring out others, I shall be glad that I have written the paper.

DISCUSSION.

DR. C. N. ABBOTT, (Toronto).—I am sure we have all listened with a great deal of pleasure and profit to the most able presentation of this subject by Dr. Clark, a subject that must interest every thinking man in dentistry. The whole question resolves itself largely into one of system, and without system who can hope for real or lasting success? The man who has a well arranged and equipped office unquestionably makes a good impression to begin with. This does not necessarily mean expensive and luxurious furnishings and a big show of glittering appliances; in fact, it has always been my belief that we should get just as far away from the dental parlor idea as possible. Our reception rooms should be bright, and preferably with an outlook on the street. Many men waste too much space in this part of their offices. A toilet room is almost a necessity to a well-equipped office. It is also most desirable to have even a small private office away from the reception room, for consultation, etc.

The operating room deserves more attention than is usually

accorded it. It should be of fairly good proportions and well ventilated. Men may differ as to whether they prefer north, south, or other light. One thing is certain, that most operators ruin their eyes by the use of too much light. The idea of flooding an operating room with a strong light is all wrong. Above all, avoid cross lights. Preferably get your light from a window of good height, and so arrange your blinds to avoid a strong light in your own eyes, but rather to direct it to the oral cavity of your patient. One man, prominent in dentistry on the continent, goes so far as to obtain his entire light for operating from a tube connected with the outside, and directing the light from this to the mouth, being himself almost in darkness. Of course, in some respects this would be ideal, though, I am afraid, not always convenient.

The operating room is a *surgery*, and should be outfitted as such. Above all, let everything look, and actually be, sanitary. To begin with, avoid plush upholstery on your chair; leather is much more sanitary, and quite as serviceable. If possible, have a fountain cuspidor attachment, preferably with white porcelain bowl; this is easily kept clean. Another thing that is hardly in keeping with modern aseptic dentistry is the felt-covered instrument table. Those of heavy plate glass or white enamelled ware with metal frame are unquestionably better. A very handy and convenient appurtenance for such a table is the combination waste and cotton holder, set on a heavy nickel base. The man who operates all day long in the standing position makes a mistake. Much of our work can be performed with greater ease and celerity, and even accuracy, in the sitting posture; and for this purpose I find the white enamelled surgical operating stool most desirable. Is it not about time that dentists should make some effort to conserve their own energies along these lines? No man can operate thoroughly who is physically tired, and I believe that the use of an operating stool will add to the longevity of any man, and make practice a pleasure where oftentimes it becomes a positive grind.

Another most handy appurtenance to the operating room is a white enamelled basin, with cover, and supported on legs with casters, for the reception of soiled dressings, etc., etc.

As regards the instrument cabinet, Dr. Clark has gone into this so thoroughly that I have no suggestion to offer, except, perhaps that we should avoid felt linings, but rather have the shelves, racks, etc., of glass or metal, which is more readily cleaned. We must observe system in the arrangement of our instruments and appliances, everything having a place and kept there. A good working list of instruments is a positive necessity, whereas an excess only brings confusion. Above all, let us cultivate the sanitary method in our offices, and avoid unnecessary display.

BUSINESS PART OF A DENTAL PRACTICE.

BY W. C. TROTTER, D.D.S., TORONTO.

Read before Ontario Dental Society, February 25th, 1907, Toronto.

Mr. President, Ladies and Gentlemen,—When I undertook to write this paper, I did not expect that anything would interfere with my being present at this meeting to read it, and to enter into the discussion which I trust it will give rise to. Unfortunately my good wife has been in poor and failing health for some weeks, and it has become necessary for her to go away for a few weeks of complete rest and change. I wish to accompany her, and as she is going with some friends who leave for Mexico on the 23rd, it will be impossible for me to attend the Ontario Dental Convention this year, to my great regret, for I have not missed one of your conventions for ten years.

The subject I have been asked to take up is the Business of Dentistry, as applied to dealing with patients, accounts, fees, appointments, collections, partnership, buying of supplies and the handling of waste products.

Money getting should not be the sole or chief aim of any man, and much less of the dentist. A moderate income is, however, very useful and necessary to every one of us. The teaching of any method or system which will aid the dentist to secure an honest and modest livelihood, with the least possible expenditure of time and loss of vital force, is, to my way of thinking, as useful as is the teaching of materia medica or chemistry. In the past it was the custom to impart the dental students only such knowledge as would benefit the patient who entrusted himself to their care and judgment. This was quite right. But now that these departments of study and research are so complete, it is only fair to the student to look slightly to his future personal welfare and teach him how to look after himself, now that we have so thoroughly instructed him as to how to look after his patient. Is it not a fact that most of the men who commence the practice of dentistry are grossly incapable of looking after their own personal interests, and are so lacking in the general business principles of conducting a practice and of economizing their time that they soon become the slaves of an unremunerative, laborious, nerve-racking practice? Once a man starts in the wrong way, how difficult it is for him to secure the necessary instruction later on, and how much more difficult it is for him to alter his ways and adopt new systems!

In dentistry, as in every other calling, there is a right and wrong way of doing everything, and a good, better and best way of doing the right. I am going to endeavor to suggest some proper systems useful in the conduct of a dental practice from a

business standpoint,—systems that tend to economize the time and vitality of the practitioner and yield him the largest possible return per hour without sacrificing the interests of the patient. In return for these suggestions I make, I hope in the discussion which follows to hear of better and improved ways of accomplishing the same results.

First and foremost, I believe that a dentist should work his very hardest and best when he does work, and should concentrate every effort on accomplishing the most and best results for the patient, and ultimately conserve his own vitality, because he can afford to work shorter hours than if he was only half working. It is so easy to get into a habit of tinkering with patients most of the day, and really accomplishing very little actual work that counts for anything, although we may be at it steadily for eight or ten hours a day. The man who concentrates his efforts and makes every minute tell, accomplishes much better results in much less time. He works steadily six or seven hours a day, and has time to go out and get the much needed fresh air, sunshine and exercise which replenish his store of energy and properly prepare him for his night's sleep and his next day's duties. During most of this time, the slow, unmethodical man is still at work in his office, working under the false impression that he is getting ahead of the other fellow who is out enjoying himself. A man who takes interest in things outside of every-day work and indulges in healthy recreation never loses anything, providing he thoroughly attends to his work when he is at it. He is a broader-minded, healthier man, and is more popular on account of it, and thus secures a larger clientele and higher fees than the slow, unsystematic plodder who works from daylight to darkness without intermission.

How can a dentist make the most of his time without sacrificing the welfare of his patient? He should not arrange to see more people in a day than it is possible to attend to properly, thereby crowding the days so that really very little is actually accomplished. By arranging too many appointments for the day an overlapping delay of appointments is brought about which is very annoying both to patients and operator, causing the latter loss of time and money, and the former improper and hurried attention. To avoid this the dentist should carefully and accurately gauge the time required for each patient with whom he makes an appointment. This is not a difficult matter, providing he has previously made a thorough and complete examination of the mouth and entered it upon a chart. Of course, the longer a man is in practice the more closely is he able to gauge the time necessary for him to perform certain operations. By allowing more time for appointments than is necessary to do the work

required the same losses may be incurred as by allowing too little and having too many appointments, but the former mistake is certainly productive of less annoyance and loss to both patient and operator than the latter. If the day's work is systematically arranged for, and every minute is made to tell, six to seven hours of such steady work ought to be enough to satisfy any reasonable man. One cannot start work too early, providing he reduces his hours at the other end of the day. From 9 a.m. to 12.30 p.m., and from 2 p.m. to 4.30 p.m., are very convenient office hours. These, of course, would have to be varied according to local conditions and personal habits. If a man is occupied continuously at the chair during these six hours his fees for a day should total at least twenty dollars on an average. If in the course of a period of time a man's earnings fail to average at least three dollars per actual working hour, he may make up his mind that something is wrong either with his system or his charges, or both. He is wasting time somewhere during the day, or is not getting adequately paid for his services.

I am not in favor of a special hour being daily set aside for examinations and treatments without special appointment, because some days there might be more people turn up than could be attended to during the allotted time, whereas on other days no one might come and the hour would be a total loss. Then, again, it is much more difficult to charge for time spent thus on a patient in which no special appointment has been made than where a regular time has been set aside for them, even if it is only ten minutes. An appointment for everyone, no matter how trivial the services required, is my plan. By reserving fifteen minutes for an examination one seldom actually loses any time, because it affords time to properly and thoroughly examine the teeth and to correctly enter the results of the examination on the chart. If there are any treatments or separations to be inserted this is the time to attend to them. As a rule, even if no other work is found to be necessary, the patients will desire their teeth polished, and the quarter-hour reserved can be used very profitably at this work. All arrangement for future appointments, and any discussion of fees or times of payment should take place at this first sitting. A thorough understanding regarding fees and payments of same at this time saves possible misunderstanding later on. If the subject is properly and discretely approached no offence need be given in discussing this subject. If your patient is a stranger to you and comes unrecommended, by remarking that a certain tooth should be fixed in a certain way but that it will be rather expensive, or by some other such strategic remark, you can introduce the discussion of fees and lead up to terms of payment without the patient ever suspecting what you are about. In this discussion you can usually size up the patient's intentions in regard to payment, and can accordingly ask for payment in

advance if you have any doubts on the subject. Frequently we have no one to blame but ourselves when we get stuck with bad accounts, as we sometimes lay ourselves open to such impositions by being too shy or unbusinesslike to discuss the subject with the patient at the first sitting for fear of giving offence or driving them away to our confrère across the way. It is not well to be too anxious to turn out work and make your mouth look large, regardless of how you are going to get paid for it. Much time is lost by inserting an unnecessary number of treatments, for which it is generally impossible to get adequate compensation. System should be used in treating teeth, just the same as in any other dental work. Whatever number of pieces of cotton soaked in medicine you deem it wise to insert in each root canal should be always adhered to in treating all teeth, so that you will always follow exactly the same routine in performing operations or treatments under similar circumstances. In this way a great deal of valuable time is saved, and unnecessary complications are avoided. Time can usually be saved by inserting treatments during appointments for other work, as a certain amount of time is always consumed in ushering the patient into the operating room, greeting them and applying a clean towel, and bidding them adieu and ushering them out, so that the fewer number of appointments necessary to accomplish a patient's work the better. Cultivate the habit of always examining the teeth in a certain definite order, thoroughly examining all surfaces of each tooth before proceeding to the next one, and entering the results on a diagram card as you go along. When the examination is completed it is frequently advisable to give the patient a hand-glass and show them the chart which you have marked and explain everything thoroughly to them. I believe in giving the patient as full information as possible, and think it much easier to insert work in the mouth of an interested and willing patient than in that of an ignorant, restless, disinterested one. A great deal of the difficulty in handling the patient, both while in the chair and also later when it comes to settling the account, may be avoided by explaining everything thoroughly to them at the first sitting and also during the progress of the work. As much as possible, always have definite instruments to perform certain stages of every operation, use them in the same consecutive order, and always keep them in the same relative position in your tray or cabinet, so that you could pick them out in the dark if it was necessary. The busy dentist should never have to spend time looking for anything.

I find it a great convenience to have a second instrument tray, which I use entirely for gold instruments, annealer, burnishers, matrices, etc., and which can be swung around to the patient's chin as soon as the dam is on and the cavity prepared. For this

idea I have to thank Dr. Caesar, in whose office I first noticed it made use of.

After an operation is once commenced the patient should never be left, unless it is for the purpose of attending to something in the laboratory for them. The telephone should be attended to by someone else. Only under very exceptional and urgent circumstances should one patient be left in the chair while you attend to another one.

It does not pay to allow agents or collectors to interview you during office hours, either personally or over the phone.

Appointment cards stating the exact hour and the day should be given to each patient making an engagement, and these cards should have a note on them calling the attention of the patient to the fact that engagements broken without adequate notice will be charged for according to time reserved.

Too great familiarity or sociability with patients is not desirable, and frequently interferes seriously with the proper kind of business relations which should exist between patient and operator. It is not our closest friends and relations that are usually our best patients. Too much conversation at the chair interferes with the efficient work and consumes time. Nevertheless it is a decided advantage for a dentist to be possessed of such a broad field of information as to always be able to enter into casual conversation with his patient on almost any subject. Some men talk so persistently while operating that they worry their patients and earn for themselves an unenviable reputation of wasting the time of their patients, and charge the same as if they had been working instead of talking. These are busy times, and the dentist who values the time of his patient in every respect as well as his own is sure of success.

A man who attempts to work societies, clubs, lodges, etc., for business will usually find the business so obtained costs him more than it is worth.

In regard to fees, I think it would be better for all of us if we charged more on the basis of the time and skill expended on operations rather than on the basis of the material consumed. I believe that, to a great extent, we are ourselves responsible for the value which our patients put upon our services. Our own opinion of ourselves and of the value of our time and skill seems in some way to be unconsciously communicated to them, and they judge us accordingly. In the matter of keeping accounts and of collecting them there is no system as convenient and as complete as that of diagram dental charts with columns on the reverse side for keeping track of the account. Each day the charts for the various patients who have appointments should be laid out on the desk for easy reference, and the charge should be entered on these by the dentist at noon and at night. Not more than ten minutes a day is necessary for this work, and then, when the

cards are placed in their correct alphabetical position in their proper compartments at night, all the bookkeeping is absolutely up to date. Those cards, the work of which is not completed, are kept in the "Unfinished work compartment"; those representing work which has been completed but not paid for are filed away in the "Finished work compartment"; and this represents the old-fashioned ledger, except that it is much simpler, for at the end of the month, when the accounts are to be sent out, all the assistant has to do is to take the cards out of this compartment and copy into statements the names and addresses and totals owing. There are no old, dead accounts to be gone over each month as in the old days. Those cards which are finished and the work paid for in full are filed away in the third compartment of "Closed Accounts," where they are always readily available for future reference whenever the patient to whom they belong returns. One cannot be too careful in correctly and thoroughly entering all work in these diagram cards, and in describing, by means of abbreviations, the treatments which are inserted, together with results and remarks on same. We never know when this information so systematically stored up may be of incalculable benefit to us, either for our own satisfaction or in possible disputes with misguided patients.

I think it is advisable to render statements every month for all complete work regardless of how recently it was completed. One should endeavor to train his patients into the idea that he expects prompt settlements, and if he does this in the proper way no offence is given and both parties are better pleased. The majority of patients appreciate regularity, promptness and system even in collecting money from them. I have always had a line at the base of my statements to the following effect: "Settlement expected immediately upon completion of operation; items of account may be seen at the office if desired." Now, I do not mean to imply that this rule has been strictly lived up to, but nevertheless it goes a long way towards ensuring prompt settlements. It lets people know that your system of business is really cash, and that if they are allowed to settle monthly, quarterly or half-yearly they are privileged and should not abuse the privilege. This little note on my statements has extricated me from many a dilemma. Patients who object to being pressed for payment can frequently be reasoned with by showing them this notice on their statements, and explaining to them that you make no pretence of giving credit and are not treating them any more harshly than you would any one else, but that it was simply your principle of doing business on a basis of prompt settlements. After awhile people get to know the conditions under which you do business, and come prepared to settle promptly. If collections are followed up systematically the sum total of accounts owing should not be greater than the total work turned out during the

previous two months. Deadheads and people who are slow pays usually avoid a man who is strict about these matters, and it is needless to say that he is better off without such patronage. A man should not lose more than three or four per cent. of accounts a year if he is reasonably careful. Accounts which have to be given to a professional collector ought to grow less and less in number every year a man is in practice. Such accounts should not be encouraged. There is very little satisfaction in suing for payment of dental accounts, as people who allow themselves to be pushed to this extremity before paying are usually proof against law. We are apt to be too anxious to turn out volume of work, and pay too little attention and thought as to how we are going to be paid for it.

It is decidedly useful to keep a small day book in which to enter the work done each day, thus affording a means of estimating the work done each month or year. Account should also be kept of all cash received and of all paid out. Unless a man has a pretty definite idea of the amount of business he is doing, and of the amount he is collecting, he cannot properly regulate his expenses and keep them well under his income as he should do.

The best earning years of a dentist do not extend over twenty years, and during these years he should endeavor to arrange to save from fifteen to twenty thousand dollars, otherwise he runs a great risk of being compelled to stint himself and his family in later years. We should not allow ourselves to be misguided by the sight of dentists who live to a ripe old age and remain able to earn a good livelihood right to the last. These men are the exception, not the rule, and usually possess constitutions much above the average. The fact that it is not possible for a dentist to acquire great wealth from the practice of his profession should discourage no one. It is certainly not the wealthy who really enjoy life or are really to be envied. We must all observe this fact sooner or later. The man who really enjoys life is he who has to work for a moderate income and who lives within his means, satisfying himself with the gradual but sure method of accumulating a modest competence. He need have little to worry about, and need never fear being in want if he will abstain from needless extravagance and will satisfy himself with the idea of gradually saving fifteen or twenty thousand dollars during his active years of practice. Such a man need not ruin his constitution with overwork, but by good management need not work more than six to seven hours a day, and can afford to take his Saturday afternoons off, besides indulging in a few weeks holidays each year. To do this he must, of course, conduct his practice on a pay-as-you-go plan. He must charge fees which will at least average him three dollars per working hour, and must economize his time in every possible way by the most complete

system in regard to appointments, convenient arrangement of instruments, medicaments and supplies, and in the prompt collection of his accounts. All this is no hardship; in fact, a man ought to take pleasure in having everything running like clock-work during his office hours.

Rent should not amount to more than fifteen per cent. of receipts, and supplies should not cost more than twelve to fifteen per cent. of business done.

A system and habit of promptly settling one's own debts the first of every month is about as important as promptly collecting from other people. One cannot place too high a value on his own honor and credit. Besides, it is always cheaper to pay cash, and saves many a worry. It also tends to prevent reckless extravagance. The dentist who allows himself to get into debt, and has collectors calling on him, is injuring his practice. In purchasing supplies it is always more economical in the long run to buy the best regardless of cost, and where you are using large quantities of any one material buy it in quantity at quantity rates, but do not store up stuff you seldom use and which is liable to deteriorate. Hesitate to buy new appliances until they have been demonstrated and tested beyond a doubt.

It is not profitable for a busy dentist to refine his own scrap, but he should carefully preserve all strips, discs, filings, sweepings, etc., for they amount to quite an item during the year.

I believe that unless a man is doing large quantities of vulcanite work he will find it more satisfactory to send his mechanical work to a really first-class laboratory. Waste of materials and supplies are avoided, and also any loss through one's laboratory assistant being occasionally idle. Work done in a public laboratory must be satisfactory or need not be accepted. Vulcanite work at the fees most men receive for it does not pay to send out in quantity. But it is high time the profession individually and as a whole made one grand effort to raise the standard of fees for vulcanite work out of the despicable depths to which it has fallen. When we receive less for the permanent replacement of an important organ of the human anatomy than a tailor gets for a coat which is only used a few months and then discarded, things have certainly come to a desperate pass. The sooner we resolve to raise our fees for vulcanite work the better for all of us, and the sooner will the public raise their estimate of the value of our services in that class of work. The very fact that the charlatans of the dental parlors are lowering and degrading prosthetic work is all the more reason why we should endeavor to elevate it. This will not be accomplished by trying to meet their cut rates, but by raising our standard of work and fees, so as to make the schedules of the dental shops look more than ever out of proportion, thus causing all thinking people to suspect the reason of the discrepancy.

My ideas on the value of partnerships in dentistry are not yet sufficiently matured to express a decided opinion. It seems to me to reduce itself so much to a personal equation between the parties interested that opinions are useless. The parties to a dental partnership must be devoid of petty personal jealousies, and be absolutely fair and just to one another at all times. This is a difficult combination to get together, and it is for that reason alone that partnerships in dentistry have not been more popular.

I feel that I have now trespassed sufficiently on your time, and hasten to close a subject to which there is no limit, and trust that the discussion which follows will present many valuable suggestions.

THE COMPUTING OF FEES, THE KEEPING OF RECORDS AND THE COLLECTION OF FEES.

BY J. H. IRWIN, D.D.S., COLLINGWOOD.

Read before the Ontario Dental Society.

I have been asked by the secretary of your Programme Committee to discuss the subject of "Business in Dentistry" from three standpoints, namely, the computing of fees, the keeping of records, the collection of fees.

In considering the first of these, that is, the fixing of a fee for a given operation, I find that it is almost impossible to arrive at a satisfactory solution. So long as dentists differ in ability, ambition, avarice, or any other of the many ways which influence the value put upon our services, then so long will the fees remain high with some, medium or low with others. The ambitious dentist constantly compares himself and his surroundings with men more fortunately situated, and strives likewise to increase his skill, practice and fees, so that he may attain and even surpass their position either in the social or the financial world. While the contented, easy-going or timid practitioner compares his lot possibly with the laborer, and finding it easy to out-distance him in the race for position or wealth, contents himself with a degree of skill and a recompense far inferior to his energetic brother.

With all these differences of temperament among our professional brothers, it is impossible to expect anything like uniformity in the matter of fees, and probably not desirable. But there is one influence in the regulating of our fees which in my opinion is given far too much prominence by many dentists, that is, the character and value of the material used. When the operator allows this matter to be discussed between himself and patient it has a strong tendency to give the proceeding a commercial rather than a professional aspect, and it is to this training that we owe the difficulty of obtaining suitable fees for our time and skill where no material is used. In this matter I constantly try to minimize the commercial value of the material used before my patients. The actual cost of the little pellet of gold, the pinch of alloy cement or porcelain, should never be discussed before the patient in the fixing of a fee, but rather let it be understood that it is the knowledge of where and how to use these materials for their benefit that they are paying. And inasmuch as one material may require greater time and skill for its proper manipulation, your fee must vary for this reason and not because of the difference of the cost to you.

A set or immovable fee for all operations bearing the same name, regardless of the difference in difficulty and time involved,

is in my opinion an injustice to both patient and dentist. Have a minimum fee if you wish, but the less said about it the better. Patients, especially strangers, may want to know, before their work is begun, the likely cost to them of the operation, and although this request is unreasonable to us, they should neither be answered abruptly nor curtly, but a little time taken to educate them as to the variety of difficulties and complications liable to be met with in the performances of two operations bearing the same name. In this way our patients may be brought to understand that their dentist should no more be asked beforehand his fee for amalgam fillings, for instance, than a contractor be asked his charge for building bridges or brick houses.

Now, although it is detrimental to the welfare and progress of our profession that dentists should give their services without a respectable fee, it is infinitely worse that so large a number of them should give their time, skill and knowledge for absolutely no recompense whatever. In this class of operations is included extracting free, treating free, advice free and examination free.

In looking at this list of free operations, it would appear that the idea is the offspring of a commercial spirit rather than professional, from the fact that no material passes from the hands of the operator to the patient.

There is no more absurd practice among the many unbusiness-like acts of a dentist than that of extracting teeth for nothing. That a busy dentist will devote the time necessary to removing all the useless teeth from the jaw, with all the unpleasant, even dangerous, associations connected therewith, without fee or reward, is almost incomprehensible. Many a second or third-rate surgeon receives a fee of fifty dollars or more for an operation occupying much less time and skill, but the dentist performs this for the privilege of, six months hence, making a denture for ten dollars, and probably waiting six months more for his pay. This act looks like a bonus for having teeth removed and replaced by artificial substitutes.

The practice of treating teeth free does not appear to be so general, although few among us receive adequate remuneration for the amount of time devoted to preparing unhealthy roots for crowns or fillings; but the class of treatment which is often obtained free from the timid dentist is that given for the relief of pain. The busy man, the careless man or the dead-beat interrupts us, often in the midst of profitable operations, with the request to stick something in his tooth. When that request comes, make a mental determination to get something to "stick in your pocket." This kind of patient never waits quietly for your convenience, but insists on immediate attention. He is usually familiar, and generally calls you "Doc," a name which you deserve if you work for nothing. You leave your profitable patient gurgling behind the rubber-dam, place him in the second

chair, and by the time you have your hands washed he has the trouble located very definitely by covering three teeth with the end of his thumb in the region of the second bicuspid. The trouble is usually a quarter of a mile from this point. You find it in the third molar of the opposing jaw. He then begins a fierce argument, and is only brought to respect your opinion by a dash of cold water from your syringe. You treat the trouble, relieve the pain, and as he bends over your cuspidor, not looking you in the face, tells you the fairy story that he is going to have you put all his teeth in good shape. It is then your duty to thank him for his promises and boldly name your fee for the present operation. The dentist who lets that man pay him with "thank you," and a promise, will grow hump-backed, grey-headed and possibly bald before he finds that he is working for dental wholesale houses and greedy landlords. No other class of men are so lax in this regard. For instance, who among you would think of asking your druggist for headache powders, thank him, walk out, and consider him paid when you promise to buy some other drugs when needed.

The dentist is often also imposed upon by those seeking advice. There is a class of people who may dislike you personally and still have great respect for and confidence in your knowledge and ability. These are they who may call upon you, and after an expenditure of considerable time get valuable advice as to what can be done with their teeth, return to their own dentist and dictate to him the knowledge received free from you. From this class of people I invariably demand a fee for advice.

Inasmuch as every community has more people who neglect their teeth than those who attend to them, a possible exception may be made in collecting a fee for the mere examination of teeth, as every encouragement should be given the public to have their teeth examined frequently. The mere examination and telling of the condition need not necessarily include what could or should be done for them.

The second phase of this subject that we have to discuss is the keeping of records. To a dentist with ordinary business instinct this is a matter of prime importance, for if properly done it gives him the useful and interesting information of the amount of work accomplished in a given time, the amount uncollected, the amount of cash received, and the nature of the operations performed for regular patients, year after year. In my own practice I record each name with the amount on a convenient pad, as soon as the patient leaves the chair each day. These names and amounts are entered in a book kept by my office assistant, and the totals for the day, the week and the month prepared so that they can be conveniently seen, for comparison with the total amount received in cash; the cash being kept in a separate book. The difference between the amount of work

done and cash received will tell you accurately the amount of uncollected accounts in your books.

In addition to this I record the work for all regular patients in an "Allport's Dental Register," with the advantages of which the most of you are familiar. By its use the nature, date and fee for the operation can be seen at a glance. It often protects the dentist from being imposed upon by the patient who wilfully or ignorantly misrepresents the facts regarding the operations performed in his mouth. It is also a source of satisfaction to the observant dentist to see how certain materials have stood the test of time.

We have "the fixing of fees," "the recording of fees," and "the collecting of fees"; but the greatest of these is "the collecting of fees," without which the others are as of sounding brass or tinkling cymbal.

No part of our work demands the same amount of courage, tact and knowledge of human nature. I hold that the proper time to think of the collecting of fees is when the patient is taking the chair for the first time. To do justice to your work, your patient and yourself there should be some mutual understanding regarding the circumstances of the patient on one hand, and the approximate fees of the dentist on the other hand. In dealing with your patients regarding this matter they may be divided into three classes. First, your regular patients, including your friends and acquaintances. Second, strangers, who have been recommended to come to you by some former patient. Third, transients, or the people who, seeing your sign, seek your services, not knowing or caring that one dentist exceedeth another in glory. In the first class will be your greatest losses, in the second class your greatest satisfaction, and in the third class, if properly handled, your greatest profit, because, neither knowing dentists nor dentistry, they receive from you for the first time the glad tidings that teeth can be saved. They are not slow to spread the good news, giving your name and methods the full credit; and the dentist who neglects this class of patient, or recklessly extracts teeth that should be saved, is sadly lacking in his full professional duty.

In dealing with my regular patients and acquaintances I follow a rule, without any exceptions, of giving a statement of the amount of their account the day on which their work is finished, before the patient leaves the office, and if a settlement is not made at the time I endeavor to find out what time the patient desires, and make a note of that date on his account. This is given to my office assistant, who calls on him or reminds him through the mail of the time his account is due. This method has the advantage over the one often recommended of sending your account on the first of the following month, in that you have your patient present to explain any little differences by reference to his mouth

and your register; but a much greater advantage is that your appreciative patient has not had time to forget your kindly personal interest, the patience and forbearance exercised in his own case, and the tedious and to him monotonous nature of your employment. In this frame of mind a reasonable man will receive and pay your account with a smile, whereas the same amount might produce a howl if sent a few weeks later. Having forgotten much, he might consider himself the victim of a hold-up.

In the case of working for patients for whom another pays I render an itemized account. In the case of families each child receives a separate and itemized account. This, I know, will not receive the sanction of the ultra-professional among you, but I have yet got to be shown any reasonable objection. The medical profession does not, the legal profession does, and I think the dental profession may. I do not give the fee for each separate item, but I give the separate dates, and the nature of each operation on that date, and the only fee appearing on the bill is the total, and to this information the parent is entitled.

In dealing with regular patients and acquaintances, eternal vigilance alone will prevent loss, from the fact that friends and acquaintances are apt to impose on your friendship, and former patients who have proved satisfactory in the past in the matter of paying their accounts cannot reasonably be denied credit; but a dentist, without too much parade of money matters, should never lose an opportunity of impressing on his patients the extra trouble incurred in looking after accounts, and the pleasure and time-saving that is afforded by those who settle promptly. An opportunity for a lesson in this matter arises daily in our practices when we are compelled to leave a patient in the chair and receive payment from another who has probably forgotten his statement, a new account having to be prepared, receipted, and possibly change made. To the patient in the chair it can easily be made apparent that this loss of time could be avoided to our mutual benefit by a settlement when the work was completed. In this matter of paying accounts your patients will treat you very much in the way they have been educated by you. If you are easy-going and unbusinesslike, they will look upon a request for payment as more or less of an insult and an insinuation that you doubt their honesty. But on the other hand, if you show business ability and system in the carrying out of the various details of your work, both the careless patients and the dishonest ones either mend their ways or give your office a wide berth (a consummation devoutly to be wished).

The second class are those who have been recommended to your office, and are generally satisfactory from the fact that they have learned your characteristics, the nature of your fees, and, being strangers, will look for no favors. In dealing with this class you are influenced more or less by those who recommended

them to come to you; but in my own case, presuming that they are ignorant as to the nature of my fees, and I to their circumstances, I generally suggest a settlement after each sitting, and to this arrangement with this class of patients I can never remember of an objection. The fairness of it to the patient is apparent. It protects him against exorbitant or unknown bills and the dentist from loss.

To the third class, or those seeking your services without any knowledge of you save that given by your sign, there is only one attitude to be taken by any dentist who would rather increase his bank account than his book account.

To those of you who may think that the methods outlined here are too radical for *your* patients, permit me to say, without any idea of boasting, what the results have been in my practice. I began practice fourteen years ago in a town notorious for its credit system, as some in this room can testify. Habits of this kind are forced on communities by necessity. This town was supported years ago by the farmers on one side and the results of the lake industry on the other. Farmers received credit through the summer, and if the Lord was good to them they paid in the winter. Sailors received credit through the winter, and if their lives were spared paid in the summer. With such a system carried on by the best business men, the average dentist had as much chance of prompt settlement as the proverbial snowball, but with careful watching my losses have been small through bad debts. I never sued a delinquent nor employed a collector. In the last few years I have been looking after my practice in the manner here advised, with the result of no falling off in the amount of work done, but a material increase in the amount of cash received. In 1905 my cash receipts were within \$50.00 of the total amount of work done, and last year, 1906, the difference was less than \$10. My patients are better satisfied and so am I.

Dominion Dental Journal

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All Communications relating to the Business Department of the Journal must be addressed to THE NESBITT PUBLISHING COMPANY, Limited, 44 Adelaide Street West, Toronto, Canada.

VOL. XIX

TORONTO, AUGUST, 1907.

No. 8.

DENTAL COMPANIES RESTRICTION TO PRACTICE —BILLS NOW IN THE HOUSE OF COMMONS.

There are some features of the practice of dentistry and medicine in Great Britain which are very interesting to those who have anything to do with dental education and legislation.

In 1858 the Medical Act of Great Britain received Royal signature, and in 1878 the Dental Act was signed. By the provisions of these Acts medicine and dentistry were recognized as incorporated bodies. They provided that all those who were in the practice of dentistry or medicine at the time of the passing of the Act should have their names put on the Medical and Dental register. These Acts did not hinder those whose names were not on the register from practice, but stipulated that they should not use the name physician, surgeon,

dentist, or any other title which might lead the public to believe that they were registered under these Acts. Under these provisions grew up a number of unqualified practitioners of surgery, medicine and dentistry.

As years went on, the unqualified found many schemes of advertising themselves as dentists, without using the name dentist. There is at the present time, a society of about eight hundred members, which is known as the extractors and adaptors society. These men do not claim to be dentists, they are extractors and adaptors of artificial teeth.

Another means of evading the law has been to organize a joint stock company, and have it registered under the Joint Stock Companies' Act, for the purpose of carrying on the practice of dentistry. By this means there was no person or individual to prosecute—a company is not a person, and as a person must be prosecuted under the Act, there can be no prosecution of a company. By this scheme hundreds of bogus dental companies have been registered in England.

Strange to say, the registrar of joint stock companies in both Scotland and Ireland were instructed by the law officers not to register any company which had for its purpose the practice of medicine or dentistry.

One of the queer features of the organization of the dental profession in England, and passing of the Dental Act, in 1878, was the placing of the management of the dental profession under the General Medical Council, without any representation from the dental profession on that council. Thus it is that the dental profession may have whatever views it pleases on dental education, or legislation, and yet they are ineffectual to have them carried out.

The two cardinal defects in the organization of the dental profession in Great Britain, which we have just mentioned, have brought about a position in the profession which, according to the *British Dental Journal*, is likely to almost annihilate the profession of dentistry, and divert its practice into the hands of mechanics, charlatans and quacks.

In 1906 a bill was introduced in the House of Lords prohibiting the practice of either medicine or dentistry by companies. This bill was reached so late in the session that its promoter felt that unless the contentious portions of the bill were withdrawn, the Companies' Act could not have passed that

session. March 13, 1907, the same bill was again introduced into the House of Lords, and on June 13th, it was subjected to certain amendments. A committee of the House of Lords was appointed to take evidence. The committee has had several sittings, and taken evidence from all classes and kinds of the community.

The bill, as it stands at present, provides that medicine must not be practiced by companies, but dentistry may be practiced by companies, provided that all the members of the company are registered dentists. This would seem quite reasonable, but this provision, or exception, is added: "Provided that nothing in this section shall interfere with the conduct of the mechanical business of the manufacture, sale, and repair of dental appliances." Which is intended to mean prosthetic dentistry, and, perhaps, crown and bridge work.

The gravity of the situation is well pointed out in an editorial in the *British Dental Journal*, which says: "What is to happen if the country is to be flooded with companies formed to conduct the 'mechanical business of the manufacture, sale, and repair of dental appliances?' Incidentally, the passage of this bill will involve the stoppage and closure of most of our dental hospitals and schools. Parents will not spend large sums to put their sons into a profession, the practice of which, in what is considered its most lucrative department, is open to every person, without let or hinderance; consequently there will be no students—exeat the students; the hospitals cannot be carried on without the students' fees—exeat the hospitals.

"In vain will have been the struggles of those who obtained the Dentists' Act of 1878; in vain the valiant work of those who have labored as teachers and hospital surgeons to raise the standard of dental education; in vain the efforts of those who have, in the British Dental Association, never spared themselves when they saw any opportunity of promoting a professional spirit, a strict code of ethics, and unity of endeavor to provide dental assistance for the necessitous.

"We are, by this bill, most shamefully treated. We have for long been used to being ignored, flouted and misunderstood by the Medical Council, and in spite of it all we have displayed to that body a passionate loyalty that, in the light of this bill, is truly pathetic. The memorandum states that 'The bill has the support of the General Medical Council.' We are, indeed,

wounded in the house of our friends. For a display of cynicism carried to the verge of disdain, commend us to the evidence of the president of the General Medical Council. He does not approve of such a thing as a dentists' company, yet he appears in support of this really because 'strong representations were made by certain dental companies, to the effect that they were perfectly legitimate corporations, not called in to practice dentistry in the sense of operative surgery, but rather the mechanical side of the profession; and that they would be interfered with in operations which were perfectly legitimate, but very useful to the dental profession, if the absolute prohibition was insisted upon.' Not to mince matters, the interests of the dentists committed to the care of the Medical Council, without representation on that body, should have been a sacred charge. Those interests have been sacrificed, we had almost said betrayed, while an altogether unnecessary tender consideration has been given the quack."

It was brought out in evidence before the committee that there are not enough registered dentists in Great Britain to care for the needs of the people. There are about five thousand dentists on the register, and over 1,700 villages and towns, with a population of more than eight hundred, which have not a registered dentist. In these localities, the only dentistry that is performed is by the unqualified. This part of the evidence before the committee seemed to have a great deal of significance, because they thought that the services rendered by the unregistered dentists were of more value than no services at all.

The effect of passing the bill will be to make a distinct separation between operative dentistry, or conservative practice, and prosthetic dentistry, or the substitution of artificial teeth for natural ones. The profession of dentistry, or dentistry as a profession, will be confined to the practice of operative dentistry. There will be, of course, difficulty in defining, or drawing the line, between what may be considered the mechanical business of the manufacture, sale and repair of dental appliances, and the practice of conservative dentistry.

COLONIALS ADMITTED TO THE ENGLISH REGISTER UNDER CERTAIN CONDITIONS.

Colonial dental practitioners who have completed a course of not less than three years' instructions in mechanical dentistry, and who have been registered in British colonies under conditions which do not require the passing of a recognized preliminary examination, will be admitted to the examination for the license in dental surgery, provided they pass the required preliminary examination in general education, and complete the course of study required by the regulations at a recognized medical school and hospital, and a recognized dental school and hospital. It was also determined that a candidate who possesses a registrable dental qualification be admissible to re-examination without producing certificate of additional study.

These regulations, so far as they apply to the R. C. D. S., admit to examination graduates who hold University of Toronto Arts' matriculation, and a license to practice in Ontario, provided the candidate can show that he has attended a medical school and hospital in medicine and surgery.

Editorial Notes

THERE will be an executive meeting of the Dominion Dental Council, held in Regina in September, 1907.

DR. FREDERICK CHARLES HUSBAND, of Toronto, was married on July 16, 1907, to Miss Margaret Lillian Gearveiss, of Toronto.

THE elections for the Saskatchewan College was held a few days ago. The new council consists of: Dr. Turnbull, Prince Albert; Dr. Keown, Moosomin; Dr. Size, Moose Jaw; Dr. Fasken, Regina; Dr. Cowan, Regina.



The above cut shows Dr. Armstrong of Indian Head, Manitoba, operating on the prairie under circumstances which seem to be very advantageous as to light, fresh air, and without distracting noises, such as door bell, telephone, street cars and hawkers. We print this as a suggestion to those who have never tried the comforts of the two-wheeled cart for a dental chair. When the dentist in the West, in his long drive, meets a patient who needs his services, he unhitches his horse, and forthwith sets up his dental office, and begins practice.

Wanted.

Good all-round man ; one who can take charge of regular run of patients. State salary and experience. Address, Dentist, 55 Charlotte St., St. John, N. B,

For Sale.

Good opening—new modern 12 roomed house. Specially arranged for Physician or Dentist. Hardwood finish, hardwood floors, hot water heating, two bath rooms. 189 Dowling Ave. Price \$7.500. Immediate possession.

Dominion Dental Journal

VOL. XIX.

TORONTO, SEPTEMBER, 1907.

No. 9.

Original Communications

WHERE PORCELAIN IS KING.

BY W. A. CAPON, D.D.S., PHILADELPHIA, PA.

The title of my paper or lecture may possibly give the erroneous idea that it is my intention to give a flowery discourse on what, to me, is a very practical subject, but such is not the case, for my choice of this term is from consideration of the fact that while many dentists are practising porcelain with a considerable degree of confidence, there are many who lack that amount which is required to secure an enlargement of their operations necessary to the success of that branch of dentistry which is desirable to the majority, therefore it is within my province and it is my pleasure to impart to you a knowledge derived from practical experience only obtained by continual observations covering a period of years of sufficient number which should guarantee an acceptance of my sincerity, no matter what opposition others may have to my statements.

Practising and teaching porcelain in its different phases has been my vocation for so many years that my belief in its superiority is excusable, and as the years advance, my confidence in such work is increased rather than diminished.

Porcelain is only king when judiciously applied, and its adaptability is wonderfully increased in proportion to the efficiency of the operator, for a few years ago it was advocated for anterior positions only, but its field has increased to such an extent that its use is practically unlimited. Although I am con-

sidered a specialist in this work, I still uphold the position I took on this point several years ago, viz., that porcelain is not a substitute for every other filling material in every part of the mouth, but that it is a substitute for gold or any other material when conspicuous or when shade or the tooth structure is endangered by metal. I will specify with the statement that if the proportion of lost tooth structure is large, just in that ratio is porcelain valuable, which is contrary to the rule when applied to gold. For an illustration, I will take the mesio-proximate surface of a first bicuspid. Filled with gold, it is unsightly and uncertain, but filled with porcelain, it is an ideal restoration without any added difficulty of manipulation in proportion to its increased size, adding to this practically no consideration of pulp complications.

The first principles which gave porcelain the chief value were its esthetic qualities, and after many years of severe tests we have added preservative qualities which have enhanced its value to such an extent that comparatively all dentists accept it as a permanent filling material, and it is at this point where many allow their judgment to be criticized by placing it in the posterior portions of the mouth, with the argument that it is just as applicable there as in other positions, overlooking the fact that in proportion to the diminishing of the esthetic requirements in that ratio should it not be used, for although we have appearance and preservation its power of resistance to force is not increased and the facilities for proper adaptation are decreased, and frequently to such an extent that obtaining an accurate mould of the cavity is an impossibility, therefore it is better practice to use some other mode of restoration.

Porcelain alone is not a tooth saver, but its value is in the fact that it is a protector for the cement which is the actual preservative, and it is the general acceptance of this fact that has given an impetus to the extensive using of gold inlays.

I have used them for many years, and the simplicity of operation is a recommendation for their use in molars as they have a masticating resistance impossible to obtain with a friable substance such as porcelain.

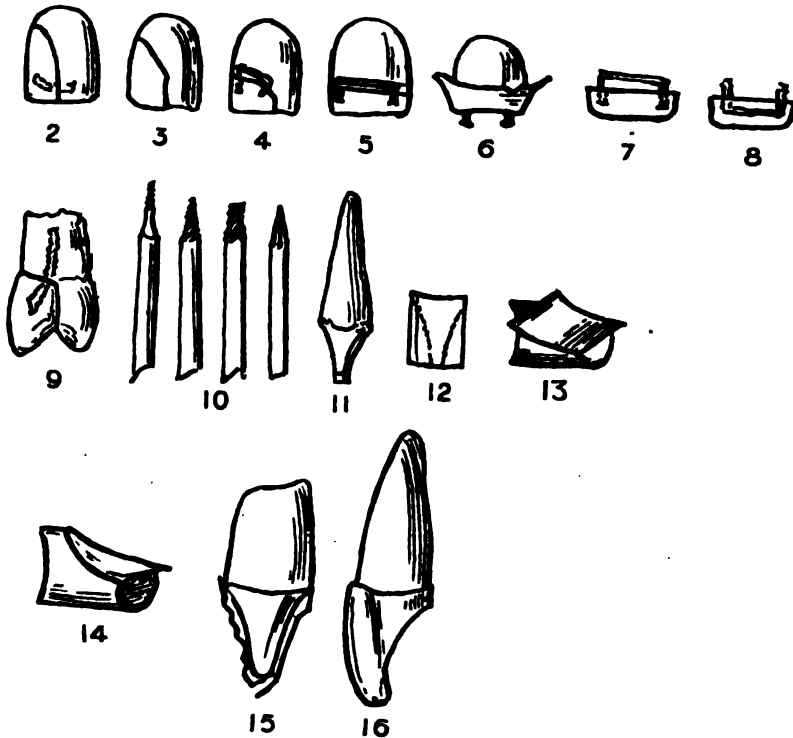
It may be argued that if a correct matrix is difficult to obtain for porcelain that it cannot be easier if used for gold, but that is overcome largely because the matrix becomes part of the metal inlay and assists materially in making a correct joint.

I should like to dwell longer on this particular branch of inlay work, but it is not my present topic, so shall dismiss it by prophesying that in a few years its adherents will be increased a hundredfold.

Porcelain is unexcelled and is the accepted filling for labial surfaces, particularly those cavities bordering on the cervix, and for approximal cavities it is unsurpassed in appearance and dura-

bility, but at this point many dentists cease to be porcelain work-not from desire, but because of failure or fear of such. Many have asked me the question if I really believed that porcelain corners and tips were reliable, and if my experience has been satisfactory. My answer to them was an affirmative one, and to you it is emphatically so, for it is in such positions that porcelain is really king over all other materials for the partial or complete restoration of the anterior teeth, as shown in Figs. 2, 3, 4 and 5.

I do not wish to be tedious by entering into technical detail, but a few directions in regard to my means of retention in such cases may be accepted and profitable. Whenever possible, it is preferable that anchorage should be entirely of porcelain, for



while pins or staples may assist, they invariably decrease the strength of that part into which they are fused. Porcelain in its entirety is a homogeneous mass, with the maximum strength that naturally belongs to it, but it is reduced the moment a foreign material is added, and while porcelain has a greater affinity for platinum than any other metal, it does not lessen the fact that it is still a foreign matter; therefore, knowing this, it is recommended that pins and loops are only used in cases where it is unavoidable, and that percentage is probably one-fifth or less. Fig. 2 or 3 seldom require such assistance, and when such is

necessary it is in the form of a small pin extending between the enamel plates and as far from the edge of the porcelain as possible.

In Fig. 4 or 5 a wire staple is almost necessary, and I desire to explain the simplicity of this method, and by so doing enable you to practise that part of porcelain which is truly the king of dental operations, as applied to the nearly natural restoration of broken or extensively decayed teeth.

A successful issue in my mind requires greater exactness and more expert manipulation than any other prosthetic operation.

PORCELAIN SECTION ATTACHMENT.

Pins from old porcelain teeth can be used without any other preparation, but they are too thick and rarely indicated in preference to the loop or staple, the latter being adapted to almost every purpose and being also easier to manipulate. The tooth is prepared and a platinum matrix made of the edges and cavity, the thickness the same as in other inlay work, excepting for the cross-section of a tooth, when it can be slightly heavier, although I use the same gauge for all such work. The wire being the anchorage, it is unnecessary to cover the floor of the cavity with platinum, therefore breaking the matrix is expected. This being done, take platinum wire, gauge 24, and bend in staple form to fit.

While the matrix is in position, the wire is inserted and held there with paste porcelain made of water and gum tragacanth or mixing fluid. Absorb moisture with bibulous paper or spunk, and then gently withdraw the combination from the tooth, and after carefully drying at the mouth of the furnace, fuse it the same as other work.

These few simple directions will save the time and trouble necessary for soldering the staple and matrix together, and will also insure a purity of porcelain not otherwise possible. No. 6 shows the loops or pins attached in the porcelain and ready for trial, reburnishing the edges and finishing as represented by Figs. 7 and 8.

No. 9 is a part section of a bicuspid, showing a way of restoring that is most satisfactory. I have made many such cases, and have yet to learn of the first failure. A whole crown is no doubt quite as easy to make, but at times a demand for the least loss of tooth makes such a repair desirable.

The building of tips and corners can be more quickly accomplished by using pieces of broken porcelain tooth in the foundation, this allowing a high heat without change in the prominent contour.

About three years ago a firm in London introduced small wedges of porcelain called "Mellersh Mineral Cores," their name

being taken from that of the inventor. They are in various shades, and will take a high heat without change of form or color. I have used them many times to advantage, and recommend them as being of assistance in contouring work.

THE PORCELAIN JACKET CROWN.

The jacket crown has done more to show the possibilities of porcelain than anything else, and its staunchness and adaptability cannot be equalled by any one crown or combination of different crowns, and if Dr. Land had never conceived any other invention or improvement, he would have done his share towards the betterment of the profession in giving us this one crown, which is the king of them all.

This is an assertion which may be derided by many and accepted by very few. By some it will be attributed to enthusiasm, which is true to some extent, but it is an enthusiasm born of conviction established by years of practical demonstration and by trials that have stood the test under all circumstances with the most improbable cases, tests so severe that they must be seen to be understood or appreciated.

Many dentists are using this crown, but few have carried it to the success that I know is possible, and it is my aim to teach and write of its merits until the majority are convinced that its field is as wide as is that of the inlay. It has already been made the subject of many papers, and has been well described by a few. In a series of articles in the *Items of Interest* eleven years ago, I felt that I covered the subject fairly well, but I know that much more can be said, and still leave something for others.

A natural interrogation by those who are not acquainted with this wonderful crown is, in what way is it so much better than others that we know are good, and which have also been well tested? Replying to this query, I will base its recommendation upon adaptability united with durability, two requisite merits very hard to overcome. But as nothing is infallible in dentistry, it is wise to be ready for trouble, which in this instance may come either mechanically or pathologically. Neither of these troubles need cause despair or much loss of time, for in the former case the most that can happen is breakage of porcelain, and, if the latter condition, all that is necessary is perforation of the crown and drilling into the root-canal, which is a matter of only a few minutes' work, but as these points will be explained in detail later on, I will first speak of the adaptability of this crown.

Some years ago I saw in a dental journal the question, "Where is campho-phenique indicated?" and the reply was that it is such a universal dental remedy that it is easier to say where it cannot be used, and so it is with the jacket crown, for I have used it in all parts of the mouth, and have found that its merits

are not limited by position. Added to this is the fact that destruction of the pulp is necessary only in a few cases where extreme sensitiveness and the temperament of the patient constitute unfavorable conditions. This crown is particularly applicable to "peg" or "rice" teeth, to irregularity and unnatural spaces, also to cases of extreme abrasion or erosion. In many cases I have used it with splendid success where the root has been split to such an extent as to make extraction apparently the only possible remedy.

It is sixteen years since my first practical test of this crown, and I have more than a thousand in use; therefore, with so much practice, one must necessarily become expert enough to reduce to a minimum the length of time required to make them. To those thus skilled it is just as easy to make this crown as any other, therefore I apply it in cases where other kinds are just as adaptable, as for instance, where the natural crown is entirely destroyed, leaving a root flush with the gum. Other crowns can be used in such cases, but my confidence in the jacket crown is so profound that I more frequently use a screw post and amalgam, making a "dummy" tooth. This is especially indicated in bicuspids and molars. I shall, however, be more explicit after a description of the method of making this crown, which is as follows:

The tooth, or the remaining portion of the tooth, is ground wedge shape, more labially than lingually, because the porcelain requires more room, so that it will be in line with the adjoining teeth, while the lingual or palatine portion has only the platinum to be allowed for, so that occluding teeth do not strike with any wearing force. The tip is cut off about one-fourth, and the enamel line is trimmed at the gum margin with Evans' root trimmers, which are the most efficient instruments on the market for such purposes. (Fig. 10.)

The grinding should be done with good stones of medium grit, using water very freely, and the simplest instrument for this purpose is the glass medicine dropper, although there is a water bulb made for such work, but it is too bulky to always be convenient. The tooth when trimmed and ready for the jacket will appear as in Fig. 11. Thin disks are used to grind between the teeth, making room for the band, also to slightly taper the tooth mesially and distally; but frequently cavities on these surfaces will obviate the necessity for this detail.

The next step is to measure the root neck, just as if for a gold cap. Instead of gold, platinum No. 31 is used, and joints are lapped. Solder with pure gold, using the least amount possible. It has been recommended that a gold and platinum solder is desirable, but I have not found it so, and cannot find any advantage in it, and it is very much more difficult to flow

properly. When the band or tube is made it is fitted to the tooth, and the lingual and labial outlines of the adjacent teeth are marked on the tube as a guide to trim those portions so that they approximately fit the wedge shape of the prepared tooth. (See Fig. 12.)

Next give attention to the palatine surface, which is ground to the dotted lines on a lathe and then reinforced with platinum of the same gauge. (Fig. 13.) Melt a little of gold on the platinum square, and then place it in the same position as the cut shows, and the solder will show a shadow as it melts, and is a guide as to the quantity and position of the gold. Always grind this section out, and do not cut with scissors, because one method gives a broad surface of attachment, and the other gives only the thin edge of metal, which weakens as it takes the furnace heat. The edges of projecting platinum are then ground even with the tube surface (Fig. 14), and then the labial or face side of the tube is ground thin to the marked line. This is the most important part of the work, and probably the most difficult, for the reason that we require a surface sufficiently thin to burnish to the natural tooth, and if the part is torn or ground through, it lessens the porcelain attachment proportionately. This being done and the tube fitted on the tooth, it will resemble Fig. 15, which only shows the outline of the corrugated front. The tongue on the incisal edge may be noted, for this is the secret strength of the crown, and cannot be seen after it is made. Press the front of metal to place with a blunt instrument with the object in view of making it irregular and better adapted to secure porcelain, and the little tip of metal on lower edge is made by pressing it against a revolving stone, which turns and gives it a thin edge in the same movement. After the metal cap is made, and before fitting, put it under the blow-pipe and anneal it, also removing any platinum grindings there may be.

The crown is then ready for the porcelain front, which is a thin veneer made for the purpose. This veneer or facing is ground thin and fitted approximately, and is attached by means of porcelain body mixed stiff with mixing fluid, which is forced into every part offering attachment, and especially between the tooth tip and the metal point, also into any depression caused by cavities. The veneer is put into position and tapped into place, and the whole is removed with pliers, and excess of porcelain removed, and then dried carefully, face down, on a tray in front of the muffle; then is gradually pushed in and the heat raised to the fusing point; then place in a cooling muffle until thoroughly cold. The crown is then tried on, and, if too full, cut from the face, and add more body where required, and finish, placing the crown on the tray, face up this time, heating and cooling carefully as before. The platinum is polished with sand-paper disks,

and the crown permanently placed with moderately thin cement, and will appear as in Fig. 16.

One of the important considerations in making this crown is to note the bite, not because another crown would give better results in certain cases, but because the occluding teeth will be a guide in the making, for certain changes are made in form and material that are of material value. For instance, I have described this crown as being made of platinum, and generally that is the metal employed, but there are places in which its combination with iridio-platinum becomes advantageous, and sometimes again the whole metal part is made of iridio-platinum. This harder metal is used on the palatine surface whenever there is very hard contact or a liability to unusual wear, as in a case of a "close bite." When the incisal edge is in direct contact it is advisable to carry the metal to the edge, bending it at the cutting edge to take the force of the bite, and have the porcelain anchorage entirely on the inside. (See Fig. 17.) In fact, many follow this method in all cases, but the porcelain tip is equal in strength and neater in appearance.

It is claimed by some dentists that it is an advantage to have the whole metal portion iridio-platinum, as its stiffness allows the use of a lighter gauge. This is true when the work is applied to lower incisors, because of their usual closeness, but this combination metal is very intractable and brittle. Even with much experience it is difficult to grind it thin without breaking, and its harshness prevents neat adaptation, as compared with pure platinum. I, however, advise the use of all iridio-platinum if the crown is to serve as an abutment either for a porcelain or a combination gold bridge. It is not generally known that jacket crowns can be used in connection with a gold bridge. This, however, is recommended, for they can be invested and soldered just the same as a porcelain attachment is by means of pins.

REPAIRING A JACKET CROWN.

The repair most likely to be needed is re-attaching a veneer. This, if not well attached, generally comes free from the metal, but if the metal tears away with it a new crown must be made. If the framework is intact and firm in place, loosen all the free edges with a thin, sharp, flat instrument, getting out the cement as much as possible, and then use an old scaling instrument as a hook at the neck, and in many cases the frame will come away, and with a little straightening be as good as ever. Sometimes a pair of pincers nipping the free point of the platinum will draw it off when other means fail. When removed, clean all the cement out of it and put under the blow-pipe, making it clean for new porcelain. If the same veneer is used, all of the old porcelain should be ground away and the metal framework

be put in front of the furnace for a few minutes to burn out any impurities; then proceed as if the crown were new. The time usually for this repair is an hour.

An unusual cause making repair necessary is the cutting away of the palatine surface by the occluding teeth. I have several cases which have required this mending after several years' use, and in every case the porcelain was intact. If they are worn sufficiently to be easily taken off, clean out the cement, burnish thin platinum or gold foil on the tooth where the cap has been worn through, replace the crown and attach the two with wax; then withdraw them and invest. Solder with twenty or twenty-two carat gold, and recement the crown. It will be none the worse for the repair, and will probably last many years longer if ordinary care is given in the soldering process.

TREATMENT OF A ROOT THROUGH A CROWN.

The jacket crown being hollow and having a thin metal back, provides a ready means of access to the pulp canal. This is a point in its favor, particularly to those who claim that a crown capped will surely give trouble unless the pulp is devitalized. Using a crown of this description, therefore, will demonstrate pulp vitality, and when treatment is necessary, lessen its difficulties.

The essayist's experience has proven conclusively that healthy pulps will live indefinitely with the tooth ground and covered as heretofore described, and that only a small percentage of teeth covered with this crown require treatment from any cause. Of course, a degenerate pulp will die and require treatment, and so trouble will occur with treated roots, and a provision for their eventual healing is good practice. The non-sensitiveness of some teeth, particularly those that have had much filling, is very elusive, and frequently every preparation for crowning has been backed by the discovery of a living or putrescent pulp. In some instances the delay caused by the necessary treatment of a mutilated tooth causes serious embarrassment; but the employment of this case of crowns relieves us of worry from this cause, for in either instance the tooth can be finished without delay, as treatment of the canal can be resorted to by boring through the platinum of the palatine surface, the opening being finally finished with amalgam, to match the metal, or by gold, if preferred.

PORCELAIN VENEERS.

For several reasons, the use of thin porcelain veneers made especially for the work is recommended. They require little change of form, and the shading is more accurate and less liable to change than in a tooth ground for the purpose. As they are inexpensive, a considerable number can be kept in stock, which

is a convenience and also a saving of time. Plate teeth are frequently employed, and a few contend that there is no disadvantage in their use, and that is true so far as the porcelain is concerned. The disadvantage is that the porcelain tooth must be ground thin, and every particle of the pin must be ground out, otherwise there may be a check in baking. Now, if the shade is correct before grinding, how is it possible for it to be so afterwards when the flat side or groundwork of the tooth, which governs the shade, is taken away? To retain the shade, the tooth must be ground equally on both sides. This reduces accuracy of shade to guesswork. Then, too, the pinheads are sure to be left in the porcelain, unless they are drilled out with a diamond drill. We all know that grinding is tedious, and if the work is placed in the hands of the laboratory student, the chances are that the result will be unsatisfactory. A further consideration is the fact that in using teeth the various products of different manufacturers act differently in refusing. This matters little if the face of the tooth is left intact, but if it is ground and given sufficient heat for reglazing, the result sometimes is different. There is also the further fact that some teeth require so much greater heat to regloss than the uniting body requires for correct fusing that the latter has lost much power of attachment in the process. I, therefore, recommend the use of veneers made for the purpose. They are all sizes and shades, and are arranged in twos, fours, or sixes, with the addition of bicuspid.

DISCUSSION.

DR. E. C. ABBOTT (Toronto)—We all recognized in the essayist one whose practical experience and whose skill in working porcelain have done much for the advancement of that part of our work which has as its goal higher ideals, both esthetic and practical. Who does not recognize the value of porcelain in dentistry to-day; gradually the unbelievers are being won to recognize its merits—and its merits are many. We must acknowledge the beautiful artistic effects which can be obtained, both in porcelain inlay and in porcelain crown and bridge. And it is a fact that porcelain does stand the stress of mastication. True, we must not use it promiscuously; we must always have sufficient bulk to obtain the necessary strength. How well adapted they are for nervous patients; the nervous tension of the patient is very slight, indeed. The essayist, in his sincere enthusiasm, has gone so far as to tell us that comparatively all dentists accept porcelain as a permanent filling material. Perhaps this is too strong. Should we accept any filling material inserted as being permanent? True, we seldom find a recurrence of decay about porcelain filling. Its hygienic properties are excellent, but in dealing with conditions such as we find in the mouth, would it not be

safer to be non-committal with patients. These fillings are embedded in cement, and there are many who will question the value of this as a permanent filling material. Extensive experiments have shown us that cements are porous, and that bacteria find in them a very favorable medium of transmission. Again, porcelain inlays which are subjected to masticatory wear and tear are necessarily a great strain on that portion of the tooth which retains them. Take, for example, an inlay on the distal approximal of a central and involving the incisal angle. In a case such as this many will slightly taper off the distal incisal angle of the inlay in order to relieve it of part of the strain to which it would be subjected were it contoured out to its full width, and so we often find ourselves devising ways and means of lessening the strain on these large contour inlays without directing from the artistic effect of the filling. Hence as a further help, would it not be wise to caution our patients as to the care they should take of these filled teeth. It does not lessen the confidence of the patient, and it may prolong the life of an inlay.

In speaking of the methods of retention, the essayist described very admirably the use of pins and staples. It would be well to discuss the many expedients used to retain ordinary inlays, such as etching the inlay, baking on Land's medic, etc. There is one method which has been advocated and is quite simple and very effective, and may be used where there is little biting strain exerted on the filling. After having secured the matrix—and it is well to have the matrix well burnished down into the cavity and against the walls—it may become punctured, but this matters little; and while the matrix is in the cavity we pack in the porcelain body, which forms the groundwork of the inlay. Then, with a lancet the porcelain is deeply scored, making a cross. We now have the porcelain in the matrix divided into four parts, and when baked it will contract toward four different centres, thus preventing warping of the matrix after having given the inlay its first baking. Then flow body over the division, not filling them. This will make crevices, which will fill with cement. The essayist's statements in regard to the superiority over all others of the porcelain jacket crown are no doubt made in good faith. And it may be possible by means of platinum wire and amalgam to convert any tooth which demands a crown into the desired shape for the reception of a porcelain jacket crown; yet some of us believe that all-porcelain crowns in centrals, laterals, bicuspid and sometimes in molars are infinitely more desirable in the majority of cases.

The story has been told of a physician who was called in to attend a patient who was seriously ill. The family waited while the physician made his diagnosis, and afterwards, when asked what was the trouble, he replied: "I don't know what it is, and

can think of nothing that would help her, but I'll tell you what I can do. I can give her something that will bring on fits, and I am h— on fits." And so is the essayist; he must be, otherwise he would not get so many good results with the porcelain jacket crown.

There is no desire to speak lightly of the advantage of the jacket crown. It is the ideal crown, used in its proper place. But can we think of a porcelain jacket crown serving as an abutment in a posterior bridge, where it might be subjected to a masticatory stress of 250 or 300 pounds, or even more? The comparatively weak band or tube of metal, either platinum or iridio-platinum, in which lies the sole strength of such a crown, used as an abutment would soon tear under such pressure. The all-porcelain crown made up with the necessary metal framework is very much stronger and better adapted for such use. In such an abutment the iridio-platinum wire which forms the dowel may be allowed to extend at right angles to its position in the root, and continue across to the other abutment. The dummy facings, together with the rest of the metal framework necessary in such a bridge, may be soldered to this same bar. The porcelain crown made in this way, in connection with a bridge, affords a splendid abutment. There are many varieties of porcelain crowns, all of which are invaluable in the cases to which they are adapted. The essayist has given us a thorough description of his method of making the porcelain jacket crown. The details have been brought out in a practical way. In the matter of veneers and facings for use in these jacket crowns, and, in fact, porcelain crowns in general, the tendency with some is to use hand-carved porcelain facings. These, of course, are carved up and shaded to harmonize with the adjacent teeth in the mouth, and when finished are exact reproductions of the original tooth.

Dr. Capon's subject is a broad one, and in a single paper it would be impossible to cover all the ground; hence there are many conditions and inductions which could not be dealt with, but on which "porcelain is king."

DR. WM. J. GILES (Montreal)—Dr. Capon's long experience with porcelain entitles him to speak with authority on this subject. My views are so nearly in accord with those of the essayist that my task as a reviewer of this paper is necessarily a light one. I have always maintained that porcelain inlays should be restricted to cavities in the anterior teeth. It is not moreover, universally applicable here, as cases arise in practice where the insertion of large-porcelain fillings would be courting disaster, by reason of the friability of porcelain. The use of porcelain tips, in my opinion, should be limited to thick teeth, and to such other cases where they would receive tender treatment on the part of the patients.

The loop attachment, as described by Dr. Capon, affords a simple and strong means of attachment. The color of a filling of this description must blend perfectly with the tooth. While this is a desideratum in every porcelain filling, it is *sine qua non* here.

The jacket crown, as described and made by Dr. Capon, has undoubted merit. I have not used it so extensively as the essayist, confining its use to small, ill-shaped, anterior teeth, and to fractured incisors with receded pulps.

DR. STEVENSON.—I am afraid I am not in a position to enter into this discussion, because I have not been doing any of the jacket crown work, of which we have heard so much. I have been very much interested in the paper, and I hope to be present to-morrow morning, but I cannot enter into the discussion at present.

DR. THROSBY.—I do not think I have very much to say regarding porcelain work. I have had a little experience with jacket crowns, and I must say that as far as we have gone we have found them very satisfactory, but I do not think we have had sufficient experience to really go into the matter very thoroughly.

DR. MAGEE.—Just before the matter is closed, I would like to ask a question or two. I would also like to make a remark which really does not pertain to porcelain work, but is in reference to Dr. Capon's statement about packing gold to a contour in a large cavity being so much more difficult than in a small one. If we are called upon to restore the contour of a bicuspid, such as is depicted on the blackboard, having its labial surface involved with the distal and the occlusal, we know we can make a gold filling which will positively save the tooth, and we are not so positive concerning porcelain.

Relatively, it is a good deal easier to make the larger filling with gold than the smaller one, for the reason that we can insert larger cylinders or pellets, and having a matrix adjusted (converting it into a simple cavity), we can more quickly pack the gold against the cavity margins, since we have plenty of room.

So I want to say for those who prefer using gold, and who are afraid that porcelain might not endure the stress of mastication, they need not consider the size of a cavity as a deterrent factor in the selection of gold as the filling material.

I have made a memorandum to ask where the porcelain body you mention is procured. You do not say anything about retention, except that you give additional retention by cutting grooves in the inlays. I would suggest that if anybody has not tried the using of a little of the cement powder which is to be used for cementing the inlay in, mixing that with a little bit of porcelain powder, and packing it in the bottom of the matrix for the first fusing, he will find that on mixing his cement and placing it in the cavity, he will have a union between the inlay and the cement

that he has mixed up, and that union, though not a perfect one, makes a much stronger attachment for the inlay than if it had been set in the cavity in the ordinary way.

I want also to ask what kinds of veneers were used. I have always been using an ordinary plate tooth, but, as I understood from the paper (I did not catch it very clearly), there is some objection to this, and I would like to know what it is.

I have had some experience with jacket crowns. I think I have tried almost every kind of crown, and I can only endorse what Dr. Capon has stated about their strength and applicability. I was not aware, though I have made them myself, that it was generally used in cases of teeth with a post left standing after fracture of an artificial crown, and the removal of which would probably leave a very frail stump, but I have never taken cases and built up a frail old stump in just the same way as he has explained, for the purpose of attaching a jacket crown.

I do not know of anything further to say, but I hope to be on hand to-morrow, and if I fail to get inside the door, I will jump over somebody's back.

DR. THOMPSON (Halifax).—I am sure we have all listened with a great deal of pleasure and profit to the paper by Dr. Capon, and those who were present this morning probably enjoyed his clinic and profited by it. Personally, I want to express my appreciation of his paper and also of his clinic. I have had some experience in porcelain work, not very much, but I have had on several occasions to replace considerable portions of the anterior teeth with porcelain, and always had the impression with regard to the pins used in retaining these tips that they were used for the purpose of avoiding the pulp, instead of a staple. You will understand that when a staple is used it runs round across the tooth, whereas when the pins are used the holes that are made to retain the pins can be drilled out on each side of the pulp. I would like to hear what Dr. Capon has to say with regard to them, because I think the staple would be much more difficult to use.

With regard to Dr. Magee's remarks, I would like to hear Dr. Capon's opinion with regard to gold inlays in bicuspid, in comparison with porcelain, and I would also like to ask if he has found it necessary to undercut the veneers in any cases.

DR. CAMPBELL (Winnipeg).—My experience is very limited. I would like to ask Dr. Capon to mention what he thinks is the reason for the splitting of the porcelain and the enamel of the teeth.

DR. NOLAN.—I am just told that no other paper will be read on porcelain to-morrow afternoon. I understood that Dr. Capon was to give a clinic to-morrow morning on porcelain tips, and then give some explanations. If not, I would like to make a few

remarks about the porcelain tip. I have had some experience in that, and some of my experience has been somewhat disappointing, probably due to my inferior knowledge of porcelain tipping.

Porcelain tips can only be applied to, I think, incisors. I came across a case of a fine incisor, which needed a porcelain tip, and the patient objected to gold, and after making that tip two or three times and having it break, I tried to devise some other means of holding it in place, so I thought of a scheme that seemed somewhat successful, and I do not know that any others have met the case. I applied a gold tip, made a gold inlay, in a way that I cannot describe without the board (makes drawing on board, with explanation). The result is satisfactory; the coverings have been in use for two years without breaking. I believe that the application of this to corners of teeth (without the aid of pins or danger of thus chipping off the enamel) having a gold inlay, with a porcelain veneer attached to it with cement, would obviate the necessity of cutting the enamel.

DR. R. C. DAVEY (Morrisburg).—I have enjoyed Dr. Capon's paper. The last speaker brought out a point which I gave a short paper on in Cornwall at the meeting of the Ontario Dental Association, and I believe it is in last month's *DOMINION DENTAL JOURNAL*. The idea of these corners being placed in so as to get the maximum of strength and at the same time to present as esthetic an appearance as possible, the point came to my mind that it might be well in some of them where there is a heavy bite, instead of placing the porcelain tip or corner or even a porcelain inlay on the post, to make an entire gold inlay for the corner, the same as has been shown. Perhaps I might illustrate it better from the board. (Draws illustration on board, and gives explanation.) I have had very little experience with the jacket crown, and am not in a position to speak of it.

DR. C. E. PEARSON (Toronto).—I have nothing particular to say on this subject, but I might indicate my method of working with porcelain. (Draws on board, and gives explanation.)

DR. CAPON.—Dr. Capon expressed his views on the illustrations given on the board, and replied to the questions of breaking. Also replied to Dr. Magee's question by illustration on board. Dr. Magee does not agree with this. Dr. Capon also gave other explanations.

Replying to Dr. Giles' paper: You must have volume if you will have strength. My reasons for using veneers in preference to a plate tooth were, as I think, so distinctly given that I do not know how to improve upon it. The veneers are already made very thin. You have a veneer the shade you are going to use, and match it to the adjoining tooth; you are not going to change that a particle, because they are already nearly ready for use. If you use a plate tooth, first of all you must get the pins out, and,

doing this, you get the thinness required, but lose the pith of the tooth, which is the coloring matter of the tooth.

DR. MAGEE.—Where do you get the veneers?

DR. CAPON.—They are all ready made, have been on the market for years, and they are only made by the Dental Protective Co., of Chicago and Philadelphia, 815 Real Estate Trust Building. Everybody knows that building. Tell them that you want veneers, and say how many, and they will send them assorted, if so desired. I advise carrying a stock of probably one hundred, including a few bicuspid.

A MEMBER.—What are they called?

DR. CAPON.—Veneers; or you might mention my name in connection with them. My advice is that you simply ask for the veneers for jacket crowns.

In regard to the word "treatment." I meant the trouble that might probably come from a tooth and a pulp after it had been crowned. But supposing that a tooth is treated, there is a question of permanent comfort. I am not going into any discussion on treatment, but here in this country, and in Ontario and in the West and Middle West, they have little idea of what we have to contend with in the neighborhood of Philadelphia, and in that section where we have sudden changes of temperature, you fill a single-rooted tooth as well as it can be filled. I do not care who fills it; you cannot gauge positively that it will never be troublesome, therefore you cannot do better than use a crown that will require the minimum loss of tooth structure, and allow you a means of egress which is totally lost as soon as you use a pin. That is the reason why I use them so much, and going right to the point, you can convey my best regards to Dr. Abbott, of Toronto, and tell him that I agree with him and his story, and say that I am "h— on jacket crowns."

The mixing fluid I used this morning in connection with the work may be had from any dealer. It is Ash & Son's Mixing Fluid, 20 cents a bottle. This quantity will last you indefinitely.

Regarding the kind of body that I use. Well, I use all kinds. I am not married to any one particularly, except may be inclined more to Brewster's materials; but I have everything that is manufactured, including Jenkins' Prosthetic Body. I very frequently use it to finish crowns when I have made the basework of some other body. The body I used this morning was a mixture of Close's continuous gum body, bought from S. S. White Co., with Brewster's base body. These two, mixed together in equal quantities, will give, without any doubt, the strongest kind of crown material, and they are of different shades. I use Brewster's enamels nearly altogether in my inlays, and think there is nothing to beat them, as far as translucency is concerned.

Retention of inlays by undercuts. I have yet to find any-

thing better than the undercut made by means of disks. I never used acid until four or five years ago, and I use it only when I cannot get thickness of porcelain to give me an undercut by means of a hard rubber disk, which will cut porcelain better than anything I know of, and I have yet to have it proven to me that undercuts are not the best way of retaining porcelain.

In regard to the bridges that were spoken of by Abbott, I do not prefer the use of jacket crowns for an extensive bridge, but I do for short bridges, or where you wish to preserve the life of the tooth, and it is already much broken or lost by decay. I get splendid results in this manner, and have tested this mode of anchorage many years.

When using them as abutments for extensive porcelain work they can be made just as strong as any other abutment, but when we open the subject of porcelain bridgework, we are getting onto something that requires a great deal of discussion and considerable experience. It is something, I assure you, that you hear more talked of than is really done.

Gold inlays in bicuspid. What is my experience? Most satisfactory, and if durability is first consideration, I prefer a gold inlay in a bicuspid to an inlay made with porcelain; for you must not imagine that I cannot see or use anything but porcelain. I assure you that a combination practice of porcelain inlays for anterior positions, and gold inlays where not conspicuous, is going to be the dentistry of the future, to the exclusion of large gold operations, because it is repeatedly stated, by expert gold operators in all parts of the country, that they are done with all large gold operations in the future. There is no getting away from the fact that a gold inlay is a great boon to the profession, for there is no doubt that it will withstand anything in reason. The porcelain inlay has demonstrated the fact that they do not wear out at the joint; therefore they must stay there, for they cannot break. A good matrix is one of the first requirements for a first-class gold inlay.

DR. DUBEAU.—We are very much obliged to Dr. Capon for his paper and remarks, and we have been very glad to hear him, and I think the best way to show our appreciation will be a vote of thanks. I hope that somebody will move it.

DR. ABBOTT.—A vote of thanks might confuse him, and as he is to be here to-morrow, would it not be better to leave it until after he gets through his demonstrations to-morrow, and then give it to him all in one lump? I know his native modesty.

Clinic at the Ontario Dental Society.**FORMING THE MATRIX FOR AN INLAY, USING THE INDIRECT METHOD.**

By F. E. BENNETT, D.D.S., ST. THOMAS.

After the cavity has been thoroughly prepared it should be well dried and the whole cavity and margins should be lubricated with vaseline or talcum powder, treating it in such a way that it will be thoroughly rubbed on the internal surfaces by means of a small piece of spunk or pellet of cotton, so that the impression material easily detaches itself on removal from the cavity.

In proximal cavities the margins should in no way touch the corresponding service on the opposite tooth, nor should the mar-



gins of the cavities in any way prevent the easy removal of the insertion of the impression tray into the cavity. The set of impression trays, five in number, which I am using, are designed by Dr. T. C. Trigger. They are of different forms and sizes, mounted on cone-socket handles, so as to be adapted to any situation of the teeth and to any sized cavity. They are made of thin metals sufficiently rigid that they will not easily bend, and having a turned edge to allow for undercuts, and also holes in the trays, all of which give attachment to the impression material, so that it will not become detached from the tray on removal from the cavity.

The materials used for taking impressions and the methods of manipulation vary, some operators preferring to take the impression by using quick-setting cement, and incorporating it with a sufficient amount of talcum powder, then applying it to the cavity and allowing enough material to extend over the marginal edges.

Usually, where the indirect methods are employed for forming the matrix, the cavity impression trays can easily be adapted, as the cavities are generally formed to allow an easy insertion and removal of them. I prefer to take an impression of a cavity with perfection compound, applying a small quantity on a tray, the compound to be heated over a Bunsen burner, then inserting it in the cavity and giving sufficient time to harden; it is then removed, and a perfect impression of the cavity is obtained.

After removal from the cavity, the model can be obtained to form the matrix from this impression by using copper amalgam, working over the surface of the impression, or by using oxy-phosphate of zinc. Probably the better method is to invest the impression in quick-setting plaster; then after it is thoroughly set the impression wax is immersed in hot water and removed. Then the plaster impression is immediately poured, with a small quantity of Olivian metal, which melts at very low temperature, consequently it is not necessary to have the plaster dry. The metal counter-die is then mounted on a Ranson & Randolph or Ash's swager; cut your gold or platinum foil and swage it up to the cast, trim, re-swage and burnish to cavity; finish with either high karat solder or porcelain.

Selections

IN MEMORIAM.

BY BURTON LEE THORPE, ST. LOUIS, MO.

The announcement, at the opening session of the National Dental Association, July 30, at Minneapolis, of the death of Professor Miller, came as a thunderbolt, and brought pain and grief to his many friends and admirers present, as it has to the entire dental profession. Three weeks prior to his death, Professor Miller, accompanied by his family, had returned to America, where he expected to reside permanently, having resigned all of his dental society and college affiliations and the positions of honor he occupied in Germany. He expected to begin in October the duties of dean of the Dental College of the University of Michigan, at Ann Arbor, his main duty there to be the training of young men to become scientific workers for our profession. While with relatives in Alexandria symptoms of appendicitis developed. On July 22 an operation was performed at the City Hospital, Newark, Ohio. The condition was found to be serious, as gangrene had set in. Death occurred Sunday, July 28, 1907. His funeral took place at his birthplace, Alexandria, Ohio, and his remains were interred in the cemetery there.

A biographer of Elizabeth Barrett Browning wrote to the *London Gazette*, when the place of her birth was in question, "You might as well expect throstles to build nests on Fleet street 'buses, as for folks of genius to be born in a big city." This opinion is applicable to the great talent of the dental profession, as well as to other forms of genius, for the majority of our foremost men were sturdy lads of the farm, in the work of which they developed the brain and brawn with which they successfully won life's battles.

Willoughby D. Miller, son of John H. and Nancy L. Miller, was born at Alexandria, Licking County, Ohio, Aug. 1, 1853. His parents were farmer folks and with them young W. D. lived until he was 13 years of age. Before that age he attended the county school and in his ninth year won the "spelling match" in three district schools. During vacations he worked on the farm, where he developed his after physical capacity for work. In 1865, with his family, he moved to Newark, Ohio, where he attended the high school, from which he graduated in 1871. Directly following this he matriculated

at the University of Michigan, Ann Arbor, and graduated as A.B. in 1875. In the autumn of that year he went abroad to attend the University of Edinburgh, Scotland, where he took a special course in Chemistry, Natural Philosophy and Applied Mathematics. Here he studied until 1876, when he went to the University of Berlin, where those branches of study were continued, he having in view the profession of mining engineer. Constant application to study caused a nervous and physical break in his health in 1877 and a serious illness forced him to suspend his studies.

Dr. Miller received his first lesson in dentistry from Dr. James Truman, who, while travelling, passed through Berlin in 1877. At that period, Dr. Frank P. Abbott, formerly of the New York Dental College and well known to the dental world, had located in Berlin, and was a leader in the so-called "American Colony" in that city. He had married a daughter of the American Minister to Germany, and this, with his own talent, had given him a high standing in social and intellectual circles. As young Miller was convalescing from his illness, he drifted into this American Colony atmosphere, where he formed the acquaintanceship of Dr. Abbott and his daughter, who both became interested in the young student. Dr. Abbott submitted to his chemical knowledge a number of professional problems, one of which was the action of tin and gold upon each other in combination as a tooth-filling material. This period was a turning point in the life of Miller. The influences then at work changed the whole current of his future, and gave to dentistry a man who has contributed more to its scientific achievements than any other one man, for it is probable that the problem of the etiology of dental caries is the greatest that has ever been solved by any one man in dentistry, and to W. D. Miller the public and the whole profession owe a debt of gratitude for this service, one which was really the outcome of the acquaintanceship begun with Dr. Abbott.

To Dr. Abbott's daughter he was married October 26, 1879. To the accomplishment of this matrimonial purpose young Miller sacrificed his previous plans in life, and became a dental student in the office of Dr. Abbott. During the session of 1877-8, he studied in the old Pennsylvania College of Dental Surgery, graduating as D.D.S. in the session of 1878-9 from the newly-organized Dental Department of the University of Pennsylvania.

Immediately after graduation he returned to Berlin and entered practice with Dr. Abbott, at the same time continuing his studies in medicine and commencing a course in bacteriology with the renowned Professor Koch. Following this he received the M.D. degree in Berlin, where he practiced up to

June of the present year. In Berlin Dr. Miller soon had a large following of both American and German patients.

From 1880 to 1890 he treated the present Empress, when she was crown princess, also various members of the royal family. Within the last year, in consideration of Dr. Miller's distinguished scientific contributions, the Emperor gave him the title of Medical Privy Councillor. This was the first time this honor was ever conferred upon an American, and the first time it was ever conferred upon a dentist of any nationality.

From the beginning of his practice to the time of his death Dr. Miller conducted the many series of scientific experiments which have done so much to make his name known to the scientific world. His writings from the first attracted attention, and he was hailed as a great scientific authority. The University of Michigan, from which he graduated as a Bachelor of Arts, conferred upon him the honorary degree of Doctor of Philosophy, and the University of Pennsylvania conferred a similar honor, the honorary degree of Doctor of Science.

In 1884, after having been repeatedly urged to accept the professorship in the new German Dental Institute, in the fall of that year Dr. Miller acquiesced, and received the title of "Royal Professor" in the University of Berlin, an honor never before conferred upon a foreigner. This professorship is a government appointment, and is only given to men of acknowledged scientific and professional standing. Dr. Miller was also promised an "extraordinary" professorship in the Medical Faculty of the University of Berlin, but as a condition it was subsequently required of him to become a naturalized German citizen. This, however, because of his loyalty to his native country, he declined, saying he "would not give up his American citizenship for any position whatever."

After his graduation in dentistry he steadily pursued his medical studies, and in 1887 came up for the "Rigorosum," the most exhaustive of all the examinations. He passed it with the predicate of "*Magna cum Lauda*," and the record of 14 out of a possible 15. The latter number, however, has practically never been reached. Aside from his record, the highest mark gained in the year in which Dr. Miller took the examination was 8. This brilliant examination established him firmly in the German University.

The quotation of Hubbard's, that "Strong people are not so much advertised by their loving friends as by their rabid enemies," is true in Germany as in other parts of the civilized world.

Previous to this time he was bitterly opposed by the German dentists, who were jealous of all American practitioners. They had repeatedly sent petitions to the Minister of Education, asking that Professor Miller's services be dispensed with,

and a German appointed in his stead. He never hesitated to proclaim his Americanism at all times and all places. After his successful examination opposition to him in Germany was silenced, and the German dental journals and other scientific journals began to evince pride in his attainments. One of the prominent dental editors declared Miller's name the brightest known to dentistry. He placed him above all his contemporaries, and suggested calling the ninth decade of the century "*The Miller Decade.*"

Dr. Miller has enjoyed the respect and confidence of his *confrères*, both of Germany and throughout Europe. He has been honored by being elected President of the American Dental Society of Europe, the National Dental Association of Germany, and the Association of Dental Faculties of Germany. At the annual meeting, 1904, of the Federation Dentaire Internationale, Dr. Miller was elected its president, an office he was elected to hold until the Fifth International Dental Congress is held in 1909, at Berlin. He had also been honored with election to honorary membership in over forty different dental societies.

From the very beginning of his professional career he was a most indefatigable student, spending many hours in his laboratory in experimentation. Much time also was given to literary work, which was by no means confined to English, for the majority of the articles he has prepared have been written and published in German, a language which he spoke and wrote fluently, and which, indeed, was as familiar to him as his native tongue. His most notable works are his books, *Micro-organisms of the Human Mouth*, and "*Lehrbuch der Konservierenden Zahnheilkunde*" (Text-book of Conservative Dentistry), besides one hundred separate publications, from one to two hundred pages each, of which the following is a list:

- On the Antiseptic Action of Filling Materials.
- Pathologische Erscheinungen am Elfenbein.
- Studies on the Anatomy and Pathology of the Tusks of the Elephant.
- The Human Mouth as a Focus of Infection.
- Concerning the Oxyphosphate Cements.
- Decay of a Replanted Tooth.
- Caries eines replantierten Zahnes.
- Bacteriology as an Integral Part of the Dental Curriculum.
- Ueber die Desinfektion von zahnärztlichen and chirurgischen Instrumenten.
- Concerning Combined Fillings.
- The Iodoform Question.
- Caries of the Teeth in an African Manatee (*Manatus senegalensis*).

Caries der Tierzähne.

Experimentelle Untersuchungen über Kupferamalgam und Amalgam-Cement.

Versuche in Bezug auf die Form, in welcher Arsenpast a zur Abtötung der Zahnpulpa am zweckmässigsten anzuwenden ist.

Einige kurze Notizen in Bezug auf bakteriologische Untersuchungsmethoden.

Einleitung zum Studium der Bakterio-Pathologie der Zahnpulpa.

An Introduction to the Study of the Bacterio-Pathology of the Dental Pulp.

Untersuchungen über die Zahnbeläge mit besonderer Berücksichtigung des grünen und der metallischen Beläge.

The Deposits Upon the Teeth, with Special Reference to Green and Metallic Deposits.

Experiments Relative to the Form in which Arsenious Acid may be Best Applied for Devitalizing the Pulp of Teeth.

Demonstrationen einiger Zahn- und Kieferpräparate.

Demonstrations of Some Preparations of Teeth and Jaws.

Die Ausgleichung von Zahndefekten mittels Porzellaneinlagen.

Some Very Rare Cases of Gunshot and Spear Wounds in the Tusks of Elephants.

On a Pathogenic Yeast-Fungus Found in the Oral Cavity.

Ueber einen pathogenen Sprosspilz der Mundhöhle.

Ueber den Bau des Molaren vom Elephas Indicus.

Die Bakterio-Pathologie der Zahnpulpa.

Recurrent (So-called Secondary) Decay of the Teeth, with Especial Reference to the Electrical Theory.

Ueber Herstellungsmethoden gewisser Zahn- und Kieferpräparate.

On Certain Preparations of the Jaw and Teeth and the Methods Employed in Disinfection of Dental Instruments by Means of Spirit of Soap.

A Study of Some Dental Anomalies with Reference to Eburnitis.

Pathologische Prozesse an einem retenierten Zahne.

Ueber Disinfektion von zahnärztl. Instrumenten mittels Seifenspirit.

Einige seltene Zahnanomalien.

The Presence of Bacterial Plaques on the Surface of the Teeth and Their Significance.

Das Vorkommen eines Bakterienhäutchens auf der Oberfläche der Zähne und seine Bedeutung.

Introduction to the Study of Immunity in its Relation to the Diseases of the Mouth and Teeth.

Einleitung zum Studium der Frage der relativen Immunität der Mundgebilde gegenüber parasitären Einflüssen.

Ueber die Transparenz des Zahnbeins und die Wirkung von Säuren auf den Schmelz.

The Question of the Transparency of the Dentin.

Ueber verschiedene Methoden der Behandlung von kranken Zähnen ohne Entfernung der Pulpa.

On the Comparative Rapidity with which Different Antiseptics Penetrate Decalcified Dentin; or, What Antiseptics Should be Used for Sterilizing Cavities Before Filling?

Die Röntgenstrahlen im Dienste der Zahnheilkunde.

Notizen über die Erosion der Zähne.

Ueber Symbiosen im Bereich der Mundhöhle und des Verdauungstraktus.

Versuche und Beobachtungen über die Erosion der Zähne.

Einige sehr seltene Fälle von Verletzungen an den Stosszähnen des Elefanten.

Die Zahnpflege in der Schule.

Die Jodoformfrage.

Die Notwendigkeit der zahnärztl. Schulung für den praktischen Arzt.

Die Wehrkräfte des menschlichen Organismus.

New Theories Concerning Decay of Teeth.

Pathological Processes in Extra-Oral Teeth.

Notes on the Erosion of the Teeth.

Preventive Treatment of the Teeth with Special Reference to the Silver Nitrate.

Disinfection of Dental Instruments with Formaldehyde.

Pathological Processes in an Unerrupted Tooth.

Asepsis and Antisepsis in Practice.

The Human Mouth as a Focus of Infection.

Further Experiments Relating to the Question of Immunity.

Microscopic Examinations of a Case of Caries in a Monkey's Tooth.

Experiments on the Comparative Value of Various Antiseptics in the Treatment of Diseased Teeth.

The Decomposition of the Contents of the Dentinal Tubules as a Disturbing Factor in the Treatment of Pulpless Teeth.

Action of Peroxide of Hydrogen Upon the Teeth.

Die Behandlung des empfindlichen Zahnbeins mit besonderer Berücksichtigung des Druckverfahrens.

Die Frage der Nützlichkeit der Bakterien des Verdauungstraktus.

Einige neuere Theorien über die Caries der Zähne.

Die relative Immunität der Mundgebilde gegenüber parasitären Einflüssen.

Weitere Studien über die Frage der relativen Immunität gegen Zahncaries.

Pathologische Prozesse an den Zähnen ausserhalb der Mundhöhle.

Die präventive Behandlung der Zähne.

Versuche und Beobachtungen über den Schwund der harten Zahngewebe.

Selbstheilung der Zahnpulpa.

Ueber einen pathogenen Sprosspilz der Mundhöhle.

Das Injektionsverfahren des Herrn Zahnarzt Noah.

Experiments and Observations on the Wasting of Tooth Tissue, Variouslly Designated as Erosion, Abrasion, Chemical Abrasion, Denudation, etc.

Ueber pathogene Mundpilze.

Ueber die Nutzbarkeit verschiedener antiseptischer Mittel bei der prophylaktischen Behandlung der Mundhöhle.

Ueber die Combination von Zinn und Gold als Füllungs-material für Zähne.

Agency of Micro-Organisms in Decay of Human Teeth. Zur Kenntnis der Bakterien in der Mundhöhle.

A Case in Practice.

Die Anwendbarkeit einiger Antiseptika bei der Behandlung der Krankheiten der Mundhöhle und der Zähne.

Elektrische Vorgänge im Munde.

Der Einfluss der Mikroorganismen auf der Caries der menschlichen Zähne.

Dental Caries.

Further Contributions on the Subject of Dental Caries.

Caries of Human Teeth.

Ueber die Caries der Zähne.

A Discussion of Questions in Dental Caries.

Fermentation in the Human Mouth: Its Relation to Caries of the Teeth.

Biological Studies on the Fungi of the Human Mouth.

Tin and Gold Combined as a Filling Material Electrically and Practically Considered.

A Reply to Some Views on the Putrefactive Theory of Decay.

Prehistoric Teeth.

The Agency of Acids in the Production of Caries of the Human Teeth, With Comparative Analysis of Carious Dentin and Dentin Softened by Acids.

Gärungsvorgänge im menschlichen Munde: ihre Beziehung zur Caries der Zähne und zu diversen Krankheiten.

Glossen zu Pasteur's Methods der Behandlung der Hundswut von Ch. W. Dulles, M.D., Philadelphia.

A Comma Bacillus in the Human Mouth.

Ueber Gährungsvorgänge im Verdauungstraktus und die dabei beteiligten Spaltpilze.

Einige gasbildende Spaltpilze des Verdauungstraktus: ihr Schicksal im Magen und ihre Reaktion auf verschiedene Speisen.

On Certain Fermentative Processes in the Alimentary Canal and the Microorganisms by Which They are Produced.

On Certain Gas-forming Bacteria of the Alimentary Canal: Their Fate in the Stomach and Their Reaction on Different Foods.

Ueber den jetzigen Stand unserer Kenntnisse der parasitären Krankheiten der Mundhöhle und der Zähne.

The Density of Teeth as Influenced by the Food and by the Administration of Lime Salts.

Zahnschmerzen und Zahnpflege.

Ueber die Nutzbarkeit verschiedener antiseptischer Mittel bei der prophylaktischen Behandlung der Mundhöhle.

Restoration of the Contour of Carious Teeth by Means of Porcelain.

Die prophylaktische Behandlung der Zähne.

Wörterbuch der Bakterienkunde.

Der Einfluss der Nahrung auf die Zähne.

Wiederherstellung der Kontur cariös gewordener Zähne durch Porzellanstückchen.

Dr. Miller's principal work and greatest gift to the profession is, however, his "Microorganisms of the Human Mouth," the result of long and tireless experimentation. This work alone has made his name a household word wherever scientific dentistry is known and practiced. Many of his best papers showing the result of his observations were published in the *Independent Practitioner*, which was edited by the late Professor W. C. Barrett, of Buffalo. This journal was the American mouthpiece for Dr. Miller. These papers were more valuable and far-reaching in their results than any before or since published in a dental journal. Speaking of these and of Professor Miller's contribution to dental science, Dr. Barrett says, in a sketch on the career of Dr. Miller, published in the *Dominion Dental Journal*, March, 1891:

"At first Dr. Miller's views were determinedly fought, for they were in direct opposition to everything then believed. But his experience was unanswerable, and soon the best men who were examining the question found that his arguments, and more especially his demonstrations, were irrefutable. The Germans were forced to accept his views; England followed; France was a little slower, and America finally awakened to the fact that she had furnished to the world the man who had solved the problem which had been the professional question of the ages.

"There are few who even now know the extent of his observations and the value of his discoveries. For instance, there was for a long time a great difference of opinion as to whether microorganisms were the cause or the product of pathological changes, and, simple as the matter now seems, it could not then be solved beyond the question of a doubt or a quibble. Miller began his experiments in producing artificial caries, accomplished it perfectly, and settled the matter for all time, in medicine as well as in dentistry. Outside the human body, where no pathological factor could enter, by pure cultivations of a specific bacterium, he obtained a product identical with that within the body. In other words, he produced structural changes in a solid tissue, under circumstances which forbade the possibility of function having anything to do with it. This alone was enough to have given him immortality among a truly scientific people. There are other great questions which he has determined, and for which the world will give him due credit when they are fully comprehended. That he discovered the true nature of dental caries and established it in the face of all the brilliant and able men who had long held conflicting views is, of course, known to all.

"What has he accomplished? It is difficult to give an adequate idea within the limits of such an article as this. Before he commenced his studies, there was no accepted theory of caries. As many separate opinions were held as there were individual thinkers and experimenters; the most absurd views were advanced, for a majority of the writers had started out with a preconceived hypothesis, to which they endeavored to make the facts conform. Miller went to work the other way. He began his experiments without a theory, deducing that from his observations. It was, in brief, this:

"Dental caries is primarily produced by an acid, which is the product of a ferment organism. Fermentation in the mouth does not essentially differ from that out of it; but one of the by-products of that process is this acid, which Miller demonstrated to be identical with lactic acid. This being produced in immediate contact with tooth tissue, dissolves the calcareous portion, thus forming a pocket in which fermentation proceeds with increased vigor. The inorganic elements of the tooth being first dissolved out, the organic portions are destroyed by yet other organisms, and thus decay proceeds.

"It will be seen that some of the causes previously urged are shown to be secondary factors in decay. Thus, the chemists had declared that it was a chemical solution. Miller shows this to be a fact; but the acids are organic acids, produced in the mouth by fermentative organisms.

"They had declared that these acids were of sufficient

power to dissolve tooth tissue, because they were in an inchoate or nascent condition; and this Miller showed to be true, but in a manner quite different from what the chemists imagined.

"Some had declared caries to be an inflammatory process. Miller showed that while this was an error, there was yet some foundation for the assertion.

"Every intelligent dentist who has been in practice a few years will remember how, in dental meetings, we formerly debated this question of etiology, and how anxious we were to solve the problem. We felt it a professional disgrace that we did not know the pathology of decay. We wrangled and disputed, and each urged his peculiar views with the greater pertinacity because he could not incontestably demonstrate them. There is nothing of this now. All clamor is hushed, and there is not a tongue to wag against what Miller has proved to be truth."

Another thing that will cause Dr. Miller's name to live in dental science is the work he has done in giving the profession the key to the problem of the wasting of the teeth. His articles along the line recently appearing are of vital interest to the profession. He recently wrote the writer of this sketch as follows: "Although at this date it is not completely settled to my satisfaction, as at this time it is not possible to digest thoroughly the great amount of work which I have done along this line, however it is hoped that at an early date the question of so-called erosion may be definitely settled as the result of my preparations and experiments, which undoubtedly will bring about the most valuable results."

It is said of Dr. Miller that he was greedy of but one thing, and that is work. There were not enough hours in a day for his labors, and he borrowed much of the night. His fame was achieved and the great good he has done was accomplished only by one thing—work. While he dreamed, thought and studied of success, yet patient and tireless investigation and experimentation have brought about his great success in solving scientific problems. He, however, found some time for play. He was an enthusiastic athlete, and held at the time of his death the golf championship of Germany and Austria. He was fond of music, although not being capable of musical expression. His special fad outside of his work was philosophical questions on the problems of life, humanitarian enterprises, etc. He was a member of the American Church in Berlin, of which he was the treasurer. He was a Republican in political belief, being an admirer of Roosevelt and honest politics. He was a member of a college fraternity, and also of a dental fraternity, *i.e.*, *Delta Sigma Delta*. As before stated, Dr. Miller was married October 26, 1779, to Miss Abbott, in Berlin. To them were born three children, John J., age 27, at this writing;

Katherine O. (now Mrs. Professor Cady, of Middletown, Conn.), and Annabel Edna, age 12, who, with his wife, mourn his loss. Mrs. Miller desires to have it recorded that "up to the very last he gave evidence of firm belief in the life hereafter. Neither his scientific pursuits nor the atmosphere of skepticism, in which he had lived so long, had shaken his Christian faith."

Summing up his life, judging from the facts as we know them, the only conclusion that we can arrive at is that his world-wide fame was justly earned. His whole life was one of earnest application and tireless study to advance dentistry, and his death the most serious loss the profession could have sustained at the present time. Taken as he was at the noon-tide of manly vigor and capacity for usefulness, the profession could probably have better afforded to lose any other man than W. D. Miller. On whom shall his mantle fall? Who will continue this work?—*Dental Brief*.

THE SEQUEL OF INLAYS.

BY E. A. ROYCE, D.D.S., CHICAGO, ILL.

The advent of inlays has without doubt given the profession another and a very valuable method of saving teeth from the ravages of decay. That the inlay has come to stay is beyond question. That it is the best filling where it is indicated all will concede, but that what is known as the inlay is indicated and should be used in all places and under all circumstances I doubt, and I flatter myself that I have good company in this opinion.

The many fillings that come to our notice which have been in place for years, prove that when indicated, a gold filling properly inserted will give a remarkably good account of itself. The claim is made that inlays will preserve teeth from decay better than any other filling we have at our command. That this claim is made is shown by two examples which have been very recently published. The first is from a paper read before the Eastern Indiana Dental Society, by Dr. F. R. Henshaw, in which he says: "I believe that the investigations of the past few years have established one thing above all others in regard to inlays—that there is less likelihood of decay at a carefully fitted inlay margin protected by cement, than at the same margin under any other circumstances. If there is no other reason for the insertion of inlays the operation is justifiable." Another example is given in the *Dental Review*, in which Dr. Wilhelm Thiersch, of Geneva, Switzerland, credits the inlay when cement intervenes between it and the wall of the cavity with a decidedly better resistance to the penetration of eosin than a gold filling. As in these cases you will find the claim constantly made that the inlay is the best tooth preserver we have.

Now it is to be noted that in each of the cases cited the writer carefully states that there should be a layer of cement between the inlay and the wall of tooth substance. I have met inlay workers who claimed to be able to fit a gold inlay to a cavity closer than a gold filling could be fitted. When asked why they cemented the inlays, if the adaptation is more perfect than that of a gold filling, the reply has been that the cement is used because they want it in the cavity. The fact is that the entire dependence of the inlay worker for the preservation of the teeth is upon the cement, and the inlay amounts to nothing more than a method of preventing the disintegration of the cement so far as decay is concerned, and to the cement belongs all the credit for the preservation of the teeth that is

given to the inlay. The insertion of the cement in such a condition that it will flow easily, and then driving it to place by a comparatively large force, using a solid nicely filled inlay for a plunger, forces the cement into all the inequalities in the walls of the cavity, not only closing the orifice but at the same time absolutely sealing the dental tubules. Undoubtedly this method of introducing cement will stop a cavity much more thoroughly than the same cement would if manipulated in the ordinary way. For this reason it would seem that the usual method of introducing cement into the cavity can be greatly improved upon. I need not tell you of the usual method, but will second what Dr. Ames said in a paper read at one of the Eastern societies some time ago, which is, that in most cases if a little cement is placed upon the walls of the cavity while the mix is comparatively thin, and after adding more powder the harder mix is forced to place in the cavity, forcing the soft cement into the most remote corners of the cavity and working the mass to place, a very perfect filling can be made. Many of our cement fillings fail because of lack of adaptation to the walls of the cavity.

Cement forced to place by some thicker or heavier material has proved such a good tooth saver that I have used it under amalgam for a number of years, and have found it of immense value. All who have made tests to find the working qualities of amalgams agree that considerable care is necessary in inserting the filling to make it at all durable. This being the case it seems good practice to use the amalgam as a protector for the cement, as thus one can be sure of perfect adaptation to the cavity walls, but in using amalgam in this way we must use one that will not shrink.

The use of cement under gutta percha has given me greater satisfaction than any other application of this method of filling. To stop a tooth with gutta percha is usually regarded as a very simple operation, but if a really good filling is to be made the material must be placed with much care. The tenderness which occurs under gutta percha fillings tells us they are far from moisture proof. Soft cement placed in the cavity and the gutta percha forced into it will give a filling that absolutely stops the cavity—it will have the non-conducting qualities of the gutta percha and the cavity sealing quality of cement. Personally I have found the mounting of crowns with gutta percha very difficult, and recently have been using a combination of gutta percha and cement for many cases. The gutta percha is placed upon, or in, the crown, as the case may be, and while soft the crown is pressed to place, and after removal of crown and gutta percha the root is smeared with the soft cement and the crown replaced, allowing the cement

to cover the root and cement the gutta percha to it. In the use of Ascher's cement it is very desirable to line the cavity with a good inlay cement. The adhesive qualities of the latter seems to keep the Ascher's cement in its place and to make a better adaptation to the cavity walls.

Few gold fillings really stop the cavity. The approximation of two solid substances so as to make a water-tight joint is a very difficult thing to accomplish, and the need of some material which could be used as a cementing substance between the gold and the dentine, or as a substance that would exclude the moisture from the cavity, has long been recognized. The method of partly filling large cavities with cement and after it has hardened covering it with gold has been practiced many years. More recently it has been recommended that the gold be introduced into the soft cement that advantage might be taken of its adhesive qualities to facilitate starting the gold filling, and it has also been recommended that all cement should be cleaned away from the margins of the cavity before the gold reaches that point, so that gold and tooth may form the joint at the margin. It is curious how men will place an inlay in the mouth with a line of cement exposed to the action of secretions and wear of mastication, and, feeling perfectly sure of its durability, call the inlay permanent, but if a line of cement is exposed around a gold filling, that filling is only temporary and doomed to fall out in a short time. Now it is a recognized fact that gold can be so inserted in teeth of good structure with healthy surroundings that it will stand the test of years, while in a poor grade of teeth where bacteria and their effects run riot, it is very difficult, if not impossible, to preserve them with gold alone. Under such conditions we fill these teeth with cement, feeling sure there would be no decay under the filling, or we would use an inlay, with the assurance of the inlay workers, that it would preserve the tooth, where a gold filling would last but a short time, showing our reliance upon cement as a tooth-saver. I have tried many methods of manipulation in order to get a thin layer of cement under gold fillings, leaving only a very fine line of cement at the margin, but I found it so difficult to accomplish that I had almost abandoned the attempt and for some time have been using A. C. Hewett's amber cavity lining, care being taken to leave the margins clear, so that gold would touch tooth at that part. This lining has proved very satisfactory so far.

In the February, 1907, *Cosmos*, W. Thompson Madin, D.D.S., of Birmingham, England, gives a method of using cement under gold fillings that seems to solve the problem very nicely, and it places the gold filling ahead of the inlay as a tooth saver, according to the ideas advanced by the inlay advocates.

His method is to prepare the cavity as for a gold filling and cover the walls with cement as for an inlay. Into this he forces thirty (30) gold foil, as if for a matrix for an inlay. The filling is then inserted into this matrix in the usual manner. This gives a practical and expeditious method of using cement under gold fillings. I have inserted a number of fillings after this method, trying to make the line of cement around the gold as slight as possible, and I find the originator's claim of invisibility is correct. In my later cases a good reading-glass would not show the line at all. The rule given is that the cement will disintegrate or wash out to a depth equal to the width of the line around inlays, and if the rule holds good for fillings, there is surely no reason to fear for the durability where the line of cement cannot be seen. The suggestion made by Dr. J. Foster Flagg so many years ago that all fillings that are inserted should have a cement lining, seems to-day to be one of the wisest of all the wise things he gave us.

NOTE.—Since writing the above paper, I have learned that Dr. Cochran, of Burlington, Iowa, has used cement lining under gold fillings for six years in a manner that is very satisfactory to him. A matrix of forty-five gauge pure gold is formed to fit the cavity, and after adjusting the rubber, Ames' slow-settling cement is placed in the cavity and the matrix forced to place. Then the gold filling is inserted, using a band matrix if indicated. Dr. Cochran uses Pack's pellets or non-cohesive gold, finishing with heavy foil. I have found that some form of crystal gold works to good advantage in many cases.—*Review.*

Prodceeing of Dental Societies

ALBERTA DENTAL ASSOCIATION.

The Alberta Dental Association held its annual meeting in Edmonton on July 9th, 1907. A large number of dentists were present from all over the Province and the following Council was elected:—A. E. Aunger, President; E. M. Doyle, Vice-President; O. F. Strong, Secretary-Treasurer; R. B. O'Sullivan, A. E. Jamieson.

THE NATIONAL DENTAL ASSOCIATION'S OFFICERS, 1907-1908.

The National Dental Association at its 11th annual session, Minneapolis, July 31st, elected the following officers for the ensuing year:

President, Wm. Carr, New York City; Vice-President for the East, Wilbur F. Litch, Philadelphia, Pa.; Vice-President for the South, J. P. Gray, Nashville, Tenn.; Vice-President for the West, Alfred Owre, Minneapolis, Minn.; Corresponding Secretary, Burton Lee Thorpe, St. Louis, Mo.; Recording Secretary, Chas. S. Butler, Buffalo, N.Y.; Treasurer, A. S. Melendy, Knoxville, Tenn.

Executive Committee—(new members)—L. Meisenburger, Buffalo, N.Y.; F. B. Kremer, Minneapolis, Minn.; M. F. Finley, Washington, D.C.

Executive Council—H. J. Burkhart, Chairman, Batavia, N.Y.; J. Y. Crawford, Nashville, Tenn.; A. H. Peck, Chicago, Ill.; F. O. Hetrick, Ottawa, Kansas; B. Holly Smith, Baltimore, Md.

Next place of meeting, Boston, 1908.



DR. EUDORE DUBEAU, MONTREAL
President of the Canadian Dental Association, 1905-6.



DR. C. F. MORISON, MONTREAL
Secretary of the Canadian Dental Association,
1905-6.



DR. H. T. COUGHLIN, GUELPH, ONT.
President of the Ontario Dental Association, 1906-7.

Dominion Dental Journal

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3 COLLEGE STREET

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All Communications relating to the Business Department of the Journal must be addressed to THE WEBBITT PUBLISHING COMPANY, Limited, 44 Adelaide Street West, Toronto, Canada.

VOL. XIX

TORONTO, SEPTEMBER, 1907.

No. 9.

THE DOMINION DENTAL COUNCIL OF CANADA.

In this issue appears a full report of the examinations held by the Dominion Dental Council, June, 1907. In the June issue appeared the papers set by the Council. Those candidates who were successful in obtaining the Council certificate are to be congratulated for having attained the highest dental educational standing in Canada. Those whose education was not considered high enough to obtain the certificate need not feel downcast, because they have shown by having passed their college examinations that they are up to the Provincial standing. The Dominion standard is high, no doubt, but it should be, because it carries with it certain privileges to practice, but far above and beyond this, it carries with it a standing which is never questioned. Already, dentists wishing assistants ask for the D.D.C. Certificate. In two cases recently, young men were given positions of trust and prominence without any other recommendation than their certificates. Then there is the knowledge that the young man knows that he holds a certificate which cannot be gotten by the incompetent, lazy or dishonest student. This is one of the greatest influences inducing young men to take the examination.

A meeting of the Executive Committee of the Council is to be held in Winnipeg during this month. Dr. H. R. Abbott, London, Ontario, the President, will meet Hon. S. W. McInnis, the Vice-President, and Dr. W. D. Cowan, Regina, Sec-

retary, in Winnipty. After the executive business of the Council is completed, it is the intention of the President, and perhaps the Secretary, to go to British Columbia to consult with the profession there, with a view to having them enter the Council. Though the Council is working admirably and having good effect on the Canadian standards, yet it will never have its widest influence until all of the Provinces have entered the agreement. To this end all should work.

At the present time it is gratifying to know the National Dental Association of the United States has appointed a committee to study our system, with a view to determining whether it is applicable to the United States or not. The States of Australia recently held a national meeting to consider forming a national standard. Its committees are also to study the Canadian system. The success of our Council has induced others to inquire into its workings, with a view to its adoption. It is unfortunate that all the Provinces of Canada cannot feel that they had a part in paving the way for dental organization and consolidation in many parts of the world.

ONTARIO DENTAL SOCIETY

A few days after the close of the last Ontario Dental Society meeting, the new Programme Committee sent out a return post card to all those who had attended a meeting of the Society within the past three years. The members were asked for an expression of opinion on the most suitable time of year for the meeting, the most suitable days of the week, the number of days of meeting, and the most suitable subjects for discussion and clinics. Four hundred cards were sent out at first, then it was decided to send out two hundred more to those who might be induced to attend the meetings. Out of the six hundred return cards sent out less than a hundred and twenty took enough interest to answer the questions asked and to tear off the attached card and post it. The Committee are delighted with the suggestions offered by those who replied.

Following the majority of the suggestions, the time for the next meeting will be, as usual, in February, and begin on Monday at two o'clock, lasting until Wednesday at noon. There is a desire to increase the number of clinics and improve the arrangements. A great number of subjects have been suggested for discussion. Among those most frequently mentioned are care of children's teeth, porcelain inlays, amalgam and ethics. The Committee will aim to present a programme following as closely the desires of the majority as possible.

SUPPLEMENTAL EXAMINATIONS.

The Dominion Dental Council will hold their supplemental examinations on November 4th, 1907.

Dominion Dental Journal

VOL. XXIX.

TORONTO, OCTOBER, 1907.

No. 10.

Original Communications

CAVITIES FOR INLAYS.

BY C. N. THOMPSON, CHICAGO, ILL.

Read before Ontario Dental Society, February 25th, 1907, Toronto.

Facts are truths proven by time and trial, consequently a portion of the subject under consideration is on probation. For though the virtues of gold, through its long use as a filling material and later as an inlay, are well known, yet the porcelain inlay in any except non-occluding cavities, is yet on trial, the end of which depends upon a stronger porcelain or a better cement. However, a stage has been reached in its development where its limitations are confined to whether its natural appearance is of enough moment to warrant using it for that reason. So its place among our other filling materials is but supplementary rather than universally applicable, as was at first supposed, and its use is confined, as a rule, to cavities in the twelve anterior teeth, buccal cavities in bicuspid, and some molars, and occasionally mesio-occlusal cavities in bicuspid.

The physical difference between metal and porcelain creates a question of importance in cavity and particularly margin formation for each, and a close study of the frailties of porcelain not only directs how to prepare, but also when not to attempt its use.

If we could forget the details of cavity formation for gold foil fillings, and remember the great difference between porcelain and gold specifically, noting that one is brittle and the other is not, that one has limited edge strength and that the other is un-

limited in that respect, and prepare cavities to favor the needs of the former, many of the failures incident to porcelain inlay work would cease.

If porcelain were as strong as gold, special occlusal margin formation and outline for it would be unnecessary, as the same cavity would answer for both; in fact, the gold inlay would be uncalled for. But as porcelain is little, if any, stronger than tooth enamel, we must specialize in its favor by so forming the cavity and margin that when the filling is set, it and the tooth may be equally resistive against wear.

Occluding porcelain fillings seldom break or crush; failures are usually traceable to the marginal weakness of either the tooth or filling. And as the margin of the cavity is dependent on the porcelain for its formation, then porcelain should be considered inadequate for such cases and denied. And further, it is well known that beveled margins are necessary for gold in any form, and that the margins will generally fail if not beveled so that the gold may protect them; and there is no logical reason why sharp margins should be any more apt to withstand stress if filled with porcelain than if with gold.

There seems to be an undefined feeling in the minds of many that if an inlay fits the cavity it should stay, regardless of whether the cavity is retentive or not, thus putting entire dependence for retention upon the cement.

Yet it is more than likely that these same operators would not consider such cavities sufficiently retentive for entire cement fillings, if to be exposed to stress, which indicates that retentive cavity formation is a feature upon which the future welfare of porcelain filling depends; and as there is usually a good as well as a bad way to do anything, it may be said that inlays are as good or as bad as we make the cavity, at least as far as permanency is concerned.

The question of what filling material will be best for any given case is one often fraught with many "ifs." But when the choice is narrowed to whether it shall be an anchored or an adhesive filling, we have arrived at a point where definite cavity formations obtain, because anchored fillings require a general retentive formation with undercuts, whereas those for inlays shall be the opposite in general formation and without undercuts. Therefore, in opening cavities for inlays, the idea of making the cavity slightly larger at the top or orifice than at the deep parts, is to be borne in mind.

As the location of the cavity determines the kind of inlay to be used, whether gold or porcelain, the location must guide. If in the twelve anterior teeth, or within the lines of vision, and not upon an occluding surface, porcelain, on account of its esthetic effect, is indicated. If not within the lines of vision, and upon an occluding surface, use gold. If large, use an inlay; if

small, use gold foil. By "large" it is understood that the pulp needs cement protection against thermal action. If within the lines of vision and extending to an occluding surface, the extent should guide. If large, and well to the buccal, use porcelain. If small and not conspicuous, use gold foil. If large and mostly to the lingual and not particularly conspicuous, use gold inlay. In pulpless teeth, gold inlays on account of the usual extent of the cavity and the lack of vitality of the enamel of the tooth, is usually safest in all occluding teeth, but in anterior teeth the porcelain inlay may do satisfactorily, though the tooth may change color afterward.

With regard to teeth with unsound supporting tissue, or those in the mouths of patients of low physical condition, an inlay is indicated in proportion, as either are infirm.

Cavities for inlays must conform to certain mechanical principles common to all inlaid work, which are that they must be at least slightly smaller at the bottom or deep parts than at the top, or orifice, and free from undercuts. The nearer parallel the side walls consistent with easy matrix removal, the more certain the retention. Deep cavities give the greater security. The more exact the filling is fitted, the less opportunity for dislodgement.

Don't worry about the cement that must be between fillings and their cavities. The trouble lies in the mechanically imperfect.

The pertinent points of difference between cavities for gold and porcelain inlays are, first, with regard to margin formation, wherein those for porcelain shall be sharp, while those for gold are to be beveled the same as for gold foil.

Second, with regard to retention; that for porcelain shall be in the body of the cavity, while that for gold shall be as near as possible to the stress to which it is to be subjected, although it may be arranged in the body also.

Third. On account of the brittleness of porcelain, its cavities should have side walls parallel to the perpendiculars of the tooth, if exposed to stress; whereas those for gold can be given any form consistent with inlay work.

Fourth. After the matrix is removed from a porcelain filling, it is just that much smaller than a gold inlay would be for the same cavity, a point of little consequence, except that the cement between gold inlays and a cavity makes them a trifle higher than it would a porcelain.

CAVITY OUTLINE FOR PORCELAIN.

A definite check or crack in a natural tooth, even though it may not leak, becomes visible because the condition produces reflecting surfaces that reflect the usual passage of light from penetrating the tooth at that point, thus producing a condition that attracts attention. The same is true of the contact surfaces be-

tween a porcelain filling and its cavity, and is a condition that cannot be entirely avoided, although if the regularity of the line between them can be disturbed, it is relieved of its definiteness and is consequently less conspicuous. Therefore, following this idea, labial cavity outline will show the least if zig-zag or stepped, with the corners slightly rounded, which in a measure does away with the continuous reflecting surfaces; for as the top of a step is at right angles to the drop, the reflections are reversed at each turn, and although the condition may throw as much shade, it will not be as definite and consequently not so apt to catch the eye.

Another reason given for this stepped outline is that as thin porcelain is never safe, depth for strength requires that the cavity be deepened from the incisal edge down for sufficient bulk to give strength at that point; then, in extensive cavities, the outline must turn longitudinally to avoid too close proximity to the pulp. And if the cavity is deep, it must turn down again, which makes at least one step in most extensive cavities that cannot be avoided, and to prevent frail corners at the incisal edge, this formation is always necessary. In as much as porcelain restores to normal form and appearance, its extent, form or outline is of little consequence, if properly matching the tooth. In extensive cavities, on account of the radiative arrangement of the enamel rods of the tooth, the nearer the incisal outline can be kept to the median line of the tooth, the safer it will be, because it will be on the lines of cleavage, which will not be the case beyond that point.

Whenever the cavity outline tends to fall near to the development lines of confluence, it should be extended beyond, as there is a tendency toward crumbling at that point. The same can be said of cusp points that are menaced, and the cause is that the surface area of the enamel of cusps so far exceeds the dentine support that many of the rods do not rest on the dentine at all, which produces a broken arrangement of long, short and uneven rods, which, once broken, is not strong, and must be cut away. Another point of interest is to avoid arranging cavity margins on or near points exposed to direct contact from opposing cusps or edges extending to fields less exposed.

CAVITY FORMATION FOR PORCELAIN INLAYS.

To go into the minute details of cavity formation for all classes of cavities in conjunction with other things, would be too much for one occasion. So I have decided to give pointed attention to but one class of cavity, "Proximo-Incisal," taking it in its turn among the other classes that will be given but a general description, and it will afterward be found that the underlying principles for all classes of cavities shall have been discussed.

SIMPLE CAVITIES.

Simple cavities are those found on the labial, buccal, lingual, occlusal and some proximal surfaces, and differ but little in general outline from those made for gold foil.

The side walls should be slightly divergent, yet nearly at right angles to the respective surfaces of the tooth, which the lines of the walls intersect, leaving the enamel edges sharp and the walls without undercuts. Secure sufficient depth to insure against breaking the filling during cementation, and also to make room for opaque foundation bodies at the bottom to prevent the cement showing through. Besides, depth of cavity adds greatly to the security of the filling. The pulpal wall or floor should be prepared to give the filling an even thickness, except at some one point it should be slightly but abruptly depressed, pit-like, to furnish the underside of the filling with a bead-like prominence to aid in guiding it to its seat during cementation. The union of side wall and floor shall be an easy curve, which facilitates the escape of surplus cement, which has a tendency to pack between flat surfaces.

PROXIMAL CAVITIES.

The preparation of proximal cavities differs but little from the simple, unless they are large enough to menace the incisal edge, or to involve extensively either or both enamel walls. Those which approach near to the incisal edge, leaving a frail corner of enamel unsupported by dentin, are worthy of much consideration, for in order to avoid exposing the margins of the filling to incisal wear, it is considered advisable to retain the incisal edge intact even to frailty, depending upon the support offered by the cemented filling for reinforcement. Experience has demonstrated that sound incisor corners, even though extensively undermined and without supporting dentin, give more lasting results than when cut away, for the reason that the cement is not exposed to wear on the proximal surface, as it would be on the incisal, and fractures do not occur unless the support gives way.

This presents a cavity with both labial and lingual plates of enamel affected, and it is usually of sufficient depth to offer good anchorage, but more security is offered if the lingual opening is largest, which formation gives the filling a wedge-like shape, with the base exposed to lingual stress, which tends always to greater security.

When the labial wall is not involved, extend the lingual opening quite extensively, cutting the sub-incisal and gingival cavity walls at right angles to the proximal surface, rounding them into union with the lingual margin, which is cut parallel to the axis and beyond the marginal ridge, having groove cut in dentin parallel and near the lingual enamel margin. This gives a self-

locking, wedge-shaped filling, with good bulk of porcelain to withstand the strains that occur on lingual surfaces. Small proximal cavities, with either the labial or lingual plate of enamel intact, are practically simple cavities, and their preparation is embodied in what has been said regarding cavities with both walls involved.

INCISAL CAVITIES.

On account of the usual diminutive size and exposed position, strictly incisal cavities are difficult to manage so that the filling will be secure. The best procedure is to deepen the cavity until the dentine, or sufficient depth is reached, preparing the floor on a horizontal plane, cutting a definite groove in the dentine between the plates of enamel across the floor and up the sides of the cavity to the incisal edge. The side walls shall be as nearly parallel to each other as possible, consistent with easy matrix removal, and slightly divergent from the perpendicular of the tooth. The union of the side walls and floor should be nearly at right angles, thus leaving the entire floor flat, to offset tilting stress. The cavo-incisal angle shall be finished sharp.

PROXIMAL INCISAL CAVITIES

are very common, and everything considered, are the most difficult class to prepare and fill properly, found in the anterior teeth; being incisal, the fillings are exposed to stress, and as the tooth is thin at that point, bulk for strength is not always possible, and retentive formations near the incisal edge amount to so little that the security of the filling is mostly dependent upon the deeper formations, and even there it is sometimes difficult to secure good interlocking retention. The general outline and formation of these cavities that gives best results is along the lines of a right angle, with the cervical floor horizontal and the pulpal wall perpendicular to the long axis of the tooth; and in cases where the position of the pulp interferes with the close adherence to this principal, the cavity should be stepped to avoid it, at the same time adhering to the principal, incline planes shall be avoided as a rule.

Gingival Wall.—If the extent of the cavity does not compel it, the cervical border should not be extended root-wise beneath the gingival line, because the cement between the filling and cavity at the margins lasts better above than if below the tissues, and gives greatest security to the filling when finished on a general horizontal plane with the margins sharp. The retentive formation consists of a groove in the dentin labio-lingually, close to the enamel, gradually running out toward the pulpal wall.

Labial Wall.—As already intimated, this wall should be zig-zag or stepped in outline to obviate the definiteness of line between the tooth and filling, blending them so to speak, by lapping

on to both sides of the line. If the enamel is frail, but sound, there is not the same need to remove it that there would be if preparing for gold foil, though if necessary, it may be sacrificed to almost any extent, because the filling, if properly made, will restore absolutely. At the incisal edge the wall shall be prepared parallel to the perpendicular of the tooth down to the dentin, or deep enough for bulk to give sufficient strength to that part of the filling. From this point to the union with the cervical floor, it may be given any rational form, but if stepped the filling will be less apt to tilt or slide under stress than if any part of the cavity be on an incline. The union of the side walls and cervical floor should be abrupt, though not sharp cornered, as the difficulties in burnishing the matrix at this point are serious enough, without additional conditions that tend to tear the platinum foil.

Lingual Wall.—As this preparation is obscured from view, the entire attention should be directed to giving bulk for strength and retentive formations, and if possible should be right angled; starting at the incisal edge, cut back a trifle more than the labial wall, and down to a line horizontal to the cervical wall and uniting them at that point, denuding the lingual dentine of enamel, if necessary. Yet, as this in some cases may seem heroic, make a step whenever the case seems to require it, always, however, keeping to the right-angled formation, and always with a view to making a secure retentive seat for the filling. Porcelain *does not* transmit thermal action readily, consequently it may be placed in close proximity to the pulp safely, so that rational retention for it may often be secured where for any but cement fillings it would be impossible. The retentive formation consists of a groove whenever possible in the lingual dentine, parallel to and near the enamel, and notching the highest point of exposed dentine quite definitely.

CAVO-INCISAL ANGLES.

The formations at this point are arranged with a view of concealing the cement that is to be between the tooth and filling, by as much as possible interposing tooth substance between it and the eye, by lapping the labial enamel over the filling, and consists of allowing the labial enamel to project slightly beyond the lingual. Then, with a very small gem stone, hollow-grind both plates equally at the same time, until the labial plate is edged, when it will be found that the small curvature of the stone has cut out to almost right angle formation on the lingual plate. This lapping formation proves the best procedure for proximal labial formations, all the way from the cervix to the incisal edge.

Pulpal Wall.—The positions of the other walls practically determine the shape of this wall, but if possible it should be so formed as to assist in making a secure seat for the filling, and

it may often be deepened in the dentine beneath either or both the labial or lingual enamel in extensive proximal cavities, thus securing effective interlocking formations.

The practicability of retentive grooves in cavities for porcelain has been questioned in the past, but as a mechanical problem, all things being considered, the larger the cement area in proportion to the size of the filling, the greater the security, and to increase the number or depth of the grooves in a given cavity, is to increase the cement area for cement attachment, which is sufficient reason for their adoption, to say nothing of the interlocking possibilities, wherein a close scrutiny of the inner portions of the cavity will often reveal an opportunity to create a condition, even though it may be small, that will prevent the filling, once sealed, from any movement whatever, except from the direction in which it was inserted, which creates a condition which permits the cement to act as a key to lock the filling in.

MESIO-INCISAL-DISTAL.

The formation in this instance is practically the same as for proximo-incisal, with the exception that all outlines, grooves and walls shall slightly converge toward the median line as they approach the incisal end of the tooth; otherwise, an inlay would be impossible. To avoid frailty, the lingual portion should be deepened to make room for a strong layer of porcelain, otherwise the filling is apt to crack during cementation.

FRACTURES OF INCISAL CORNERS.

This condition usually occurs from a blow or accident. It appears difficult, but owing to the fact that the dentin is free from caries, is not. The procedure is to start at the limits of the fracture on the incisal edge and proximal surface, removing both plates of enamel from the dentin, making a right angle formation both labially and lingually, leaving the dentin protruding; this notched on the top and grooved in the dentin near the perpendicular outline will create good retention.

Cuspid-Proximal.—The only noticeable difference between formations for cuspids and incisors is with regard to the conical formation of the former, from the contact point to the end of the cusp, whereon the receding outline of the cusp occlusally creates proximal fillings with very acute angles exposed to wear, and though it is true that they are not exposed to direct stress, the acuteness of angle is such that they often break. So that the best procedure is that when the cavity approaches the cusp point, it should be cut away, giving the cavity a stepped outline, arranging the margin on the opposite slope, where the filling corner becomes obtuse and stronger, in this way restoring the entire cusp point. This plan of outline applies to extensive bicuspid cavities also.

PROXIMO-OCCLUSAL CAVITIES IN BICUSPIDS AND MOLARS.

While it is true that porcelain is contraindicated in such cavities, yet there are occasions where for esthetic reasons it is desired, and they must therefore be considered. And as the principles involved are similar, both being exposed to the same forces, working to dislodge the filling, and the same plan of cavity outline and anchorage applying to both, they should be treated alike. And in order that no part of the finished filling shall be frail, the plan for cavity outline for porcelain in posterior teeth calls for careful consideration of its friable nature, with due regard to the location of margins and the probable stress to which they, as the vulnerable point, are to be subjected, and calls for critical discrimination on the part of the operator with regard to outlining the cavity in such a way that the margins may be protected as much as possible by surrounding prominences on the tooth or filling, and as far as possible from points exposed to cusp contact from opposing teeth; and wherever possible carry the outline out to the axial surfaces through fissures or unexposed localities, far enough down to give depth for strength and free from excessive occlusal wear. Posterior teeth, with extensive M. O. D. cavities are quite practical. The cavity formation is best prepared by removing the remaining occlusal enamel freely to allow room for thick occlusal surface to the filling, leaving the cavity box-like. The retention guides are arranged in both sides of both the mesial and distal-proximal portions; in fact, the retention is usually ample in such cavities. The details that require the greatest attention are with regard to so forming the cavity as to facilitate easy burnishing and removal of the matrix, and to allow for strength, being careful to leave no sharp prominences in the cavity that might cause splitting stress.

The retentive features of proximo-occlusal cavities lie in grooving the side walls in the deeper parts, giving the occlusal outline a generally retentive formation when possible. Thin porcelain is never safe, consequently the body of the filling, and not its extremities, shall present retentive prominences.

CAVITIES FOR GOLD INLAY.

As indicated in what has been said relative to porcelain for the anterior teeth, gold inlays are mostly practical in extensive complex cavities in the bicuspid and molars. Although they are often of the greatest value in anterior badly broken teeth, as in the instance of an end-on bite, where the stress is heavy and the enamel is intact, for they can be fitted to almost any rational cavity as well as porcelain, and can be used instead provided that extraordinary edge strength is necessary and not particularly exposed to view.

Some of the formations for them are much like those for gold

foil, though the general formation is reversed for the inlay. Margin formations are identical and the general outline similar.

The retentive features for the inlay are that all grooves, walls and margins shall be aligned in such a way that the matrix will draw without distortion, yet so that the filling, when seated, will be locked mechanically to the tooth. This is accomplished by grooving the cervical floor and opposite side walls in the dentine to the top of the cavity, slightly diverging and deep enough to furnish the inlay with a bead to slide into them as the filling is inserted from the top, and in addition to this, the sulcus on the occluding surface offers an opportunity for creating a hook or key-like formation that is the most desirable of all, on account of its close proximity to the stress.

One of the greatest benefits from the use of the gold inlay is that, many, in fact most badly broken down posterior teeth, can be fully restored instead of resorting to crowning, a practice too common at the present time; the benefits derived being principally with regard to the nicety of fit beneath the border of the gum, something not general with banded crowns.

Gold inlays, if the cavity is large and the interlocking formations ample and good, make ideal abutments for short bridges, and in the form of overlays are particularly applicable to the lingual surface of the anterior teeth as abutments for bridges in that locality. As might be expected, however, with anything that fits as accurately as the gold inlay must, there is an element of risk in their use as abutments, because the natural draw of the assembling solder is sufficient to unpoise them and always will unless the case is carefully adjusted and packed beforehand.

As to the reliability of the inlay, basing an estimate on past experience, it is safe to say that the gold inlay, if properly made and accurately fitted to its cavity, is second to no other filling as far as permanency is concerned, and there seems several logical reasons for it; first, it is much more dense than foil fillings, and consequently does not yield to stress; second, the mission of the cement is manifold—non-conducting, sealing, supporting and adhesive. Thus the tooth and filling are locked together throughout their entire contact area, protecting the pulp from thermal action, and holding the cavity adhesively against the filling, which minimizes fractures—conditions very different to what would occur if foil were used.

The permanency of porcelain in non-occluding cavities, as far as the writer has been able to determine, is about equal to gold foil fillings. Perhaps the percentage of actual failures has been a trifle more, but it must be remembered that if for any reason porcelain fillings leak they come out, a feature unfortunately not so common to anchorage fillings. So, although I am confident that all porcelain fillings at my hands are preserving as expected, I am by no means as sanguine regarding those made of gold foil.

Porcelain has become a fixture among the other filling materials in every-day modern practice, and none can afford to do without it, if for no other reason than the benefits derived from the artistic tendencies created by working with it, for it immediately creates a keen sense of the art that conceals itself.

In closing, permit me to mention a few details that apply to inlay work.

The strength, particularly the edge strength, of porcelain, is commonly impaired by over-baking, and the maximum strength or density is attained by holding the heat of the furnace at an even temperature for a considerable time, depending upon the porcelain in use, just above the fusing point, thus allowing time for the mass of carved porcelain to become fused evenly throughout, baking, not broiling it, as we do with a continually rising temperature, as was so aptly stated by Dr. Nyman, of Chicago.

It is a difficult task to match a tooth with porcelain absolutely. Two or more inlays made at the same time and from the same mix may, and generally do, vary in finished shade, probably due to the few degrees variation in the heat of different parts of the furnace, a few seconds difference in the time of exposure to the heat, a greater or less thickness, a variation in form or size, whether flat or rounded, may produce a slight variation of shade and usually does. Yet experts can tell at a glance what ought to produce a given shade, though sometimes it may take several attempts to secure an absolute match.

Fillings that are correct before cementation and not afterwards are too transparent; use more opaque foundation body and less enamel.

Fillings for distal cavities should be a trifle lighter than the tooth, while those for the mesial should be, if anything, a trifle darker.

PROPER CARE OF THE MOUTH AND TEETH ESSENTIAL TO GOOD HEALTH.

BY A. E. WEBSTER, M.D., D.D.S., L.D.S., TORONTO.

Delivered before the Women's Institute Convention, Guelph.

I wish to congratulate this organization first for having seen far enough into the present modes of living to know that the condition of the mouth has some relation to general health. I also wish to congratulate you for undertaking a work which the Education Department has shied at for years. And above all I wish to congratulate you for having the means and the power to carry out your convictions. Some one has said that the health and the morals of a nation depend upon its women. This is a truer statement than many of us realize, and it is of greater importance to a nation than even its leaders are sometimes willing to admit. A nation's greatness depends so much upon its good physique and good morals that it is fitting for this great organization of women to interest itself in every matter which tends to better the health of the people. A woman who is not capable of feeding and training a human being to take his part in building a nation, such as we hope for in Canada, should not be entrusted with such responsibilities. This fact has been recognized by the leaders of nations and they have set about in many ways to have their views carried out.

Recruiting for the army in Great Britain during the past decade has brought out the fact that the physique of the nation is rapidly deteriorating. A commission was appointed by the Government to investigate the cause of this loss of physical strength. Among other things, this commission reported that the children were improperly fed, in some cases underfed, and in many cases incapable of assimilating the food they received because of the defective condition of their teeth and the consequent unhealthy state of their mouths. Thus you can see how a subject which would seem to be a personal one, becomes of national importance. A nation of toothless adults could never endure the hardships of warfare. Both the army and the navy have recognized the importance of good teeth, because only such recruits as can properly masticate their food are accepted. Thousands of recruits in Great Britain alone, have been rejected for want of good teeth. Nurses, bank clerks, and many others are required to present a certificate of a healthy mouth before they enter upon their duties. Some life insurance companies will give a specially low rate to those who have good teeth and a clean mouth. Again we see the recognition of the importance of a healthy mouth to the general health.

This is the first official step taken in this country to set forth

the importance of oral hygiene to the mothers of the nation. You may clothe your children well, you may give them wholesome food most temptingly prepared, but if they cannot masticate it properly because of sore gums or defective teeth, you will raise a nation of weaklings.

Now, why has this subject come into importance during recent years? Our forefathers had better teeth than we and yet they used no tooth brushes. Why this change? Decayed teeth and unclean mouths is the price we pay for modern civilization.

Those people and those nations who are to-day living upon coarse farinaceous foods, meats; not pounded into a jelly, and starches not stewed into a paste, have little trouble from decay of teeth. Our forefathers ate such food as exercised their teeth and gums, while we eat foods which are made into a pasty, sticky consistency, requiring no mastication before swallowing. The particular kind of food has much less to do with the decayed teeth than its preparation for eating. Nature intended that our foods should be hard and tough, requiring a great deal of force for mastication, else she would not have supplied us with teeth so hard and muscles so strong.

Did you ever realize that many of you here can close your teeth with a force of 200 pounds? A beefsteak requires a force of from 60 to 80 pounds to cut through it with ordinary teeth. If these powers were not intended to be used they would not have been given us. Those tough, hard natural foods which our forefathers used, scrubbed, exercised and massaged the gums and kept them in a healthy condition, while our soft foods do not give the gums the exercise they need and in consequence the gums become soft, spongy, and bleed easily when touched. Beside the beneficial effect these hard foods had on the gums and teeth in general, they exercised their most beneficial effect in preventing the decay of the teeth.

I might say here, that decay of the teeth is due to *micro organisms* becoming lodged in some crevice in the surface of the enamel and being allowed to remain quietly in position until it develops an acid, which dissolves the tooth substance. Once the surface of the enamel is penetrated, decay can go on interruptedly. As you will note, decay begins on the outside, and the organisms which set up decay must not be disturbed or they will not grow. They are plants and will not grow if disturbed no more than a bean. Then it must be plain to you that if the surfaces of the teeth could be kept clean, decay would not occur. That is, if the organisms were frequently disturbed or scrubbed off, they could not grow. This is just what those hard, tough foods did for our forefathers; as they sunk their teeth through a piece of food, it scrubbed every surface of the tooth, removing any bacteria that might chance to have become attached. You can readily understand how the teeth can be cleaned by forcing them into a hard

apple or chewing a good tough piece of beef or properly masticating one of those good old-fashioned biscuits.

Compare the cleansing effect of these substances on the tooth's surface with corned beef, hash, tapioca pudding, mince pie, bread pudding, boiled rice, jelly and whipped cream, coffee, cream, sugar and cake. These substances not only do not cleanse the surface of the teeth, but they contain all the elements to cause decay, besides the power to stick closely to the surface of the teeth. They are taken at the last of a meal, thus giving them unusual opportunities for sticking to the teeth and developing micro organisms. It is a fact that the organisms of decay only develop in starches and sugars, thus you see how well suited many of these much prized articles of diet are to cause decayed teeth. The substances mentioned are the very ones in bacteriological laboratories for growing micro organisms,—jelly, meat, broths, potatoes, sugar, and jelly together with milk and blood serum. These are kept warm and moist; so are they in the mouth—perfect condition for growth.

To repeat, the mastication of tough, hard foods of the hydro-carbonaceous variety cleanses the teeth, prevents decay, exercises the attachments of the teeth, massages the gums; while sticky, gummy, starchy, sugary foods do not cleanse the teeth or exercise them in their sockets nor massage the gums, but do assist in causing decay. Now, what can we do about all this? We cannot expect you good mothers and house wives to stop making mince pies and angel cake, and we won't stand for tough scones and beef all gristle. But you can see that your children have at each meal one article that requires mastication before swallowing. You know chewing food becomes a habit. If children are always fed upon foods which do not need mastication, they will never develop that power. The chief harm in swallowing food without mastication is the need for its being thoroughly mixed with the saliva, because the saliva plays an important part in digestion. Since the foods we eat now-a-days do not clean our teeth and massage our gums, we are compelled to use other means for this end. We use the tooth brush to cleanse our teeth and rub the gums with a towel or our fingers. We are compelled to scour our teeth with a grit to remove sticky foods, stains and concretions.

Before discussing the details of how to care for the mouths of children, because if neglected, the consequences are of greater moment than in adults, let us consider the effects of not cleaning the teeth, first locally, then generally.

It must be admitted at the outset that though we try ever so faithfully to keep our teeth clean, while we continue to eat slops and pastes of starch and sugar, our teeth will decay. But they will not decay on the surfaces exposed to the action of the tooth brush. Teeth decay in direct proportion to their uncleanness.

Now let us consider a case—a child two years of age has twenty teeth and is capable of masticating all ordinary food. But does he get a chance? Not often. Poor dear little fellow, it is too much work for him to masticate a crust or a rusk; they must be soaked in milk, or he must eat only porridge, milk, and soaked bread.

It isn't long before his temporary teeth begin to decay. One or other becomes tender to bite upon or sensitive to cold water. More reasons for keeping them unclean. No attempt is now made to either masticate on the side of the mouth with the sore tooth or to wash the mouth with water. This tooth and others decay more rapidly because the nice organisms are not disturbed any more than slight cultivation by bringing new food to them by each meal of slops. Actual pain ensues. The child loses actual rest besides not eating as well, from having sore teeth, and a deranged stomach from swallowing organisms from about the sore gums and teeth. Mothers often have an idea that children so young should not have tooth-ache, and therefore they haven't. A child so fed may not reach the fifth year without having had any paining teeth, sore gums, abscesses, developed, and what is worse, he has not learned to masticate food.

That insane notion still holds on to some people that because a child's baby tooth is decayed or paining, nothing should be done for it, except, perhaps, extracted. If ever during the whole existence of a human being, he should have the advantages of a good set of teeth it is during the development period. Up to the age of 18 or 20 the boy must assimilate food enough, not only to keep up the natural waste, but also to provide for developing his physical and mental power.

The adult need only keep up the body after it is developed. No child can develop properly if he has a nagging toothache, sore gums and indigestion from want of proper mastication of food, and the swallowing of pus and infectious matter from the mouth. The future of a boy or a girl is often handicapped more by improper development from this cause alone than from want of our so-called education. What good are fine schools, good teachers, suitable clothing and abundance of food to such a child; he cannot attend to his school work or enjoy his surroundings if he cannot digest and assimilate his food. Decay of the teeth is a disease of childhood. Persons who reach the twentieth year without a decayed tooth, will likely escape until the fiftieth or sixtieth year, when other troubles will arise.

Decayed and decaying teeth have a train of local consequences worthy of considerable thought by parents and the state.

As the tooth decays, it becomes sensitive to heat and cold. It often pains when the patient goes out into the cold air or drinks cold or hot fluid. The pain becomes more frequent until it may begin without known cause and last for hours, causing most in-

tense suffering. Some times warm applications may relieve these cases, but not always. The same tooth may have several attacks of this severe pain at intervals of days or weeks. During any of these attacks the patient is incapable of doing his ordinary duties and bears more real suffering in any five minutes than will be caused by having it properly treated and restored to health and usefulness. The patient is prostrate during these attacks. Such a tooth may now cease to give pain for months, though there is a large cavity in it; but it is likely to begin to get sore to the touch.

It seems longer than the rest. A deep, throbbing pain is felt in the jaw. It becomes worse and worse, the tooth is now so sore that it cannot be touched without causing severe pain. There is loss of appetite, loss of sleep, a general feeling of lassitude with fever. This may go on for two or three days, during which time the patient is prostrate. The face may show signs of swelling, after which the acute pain may subside slightly, but the general condition of the patient does not always improve. There is developed in such cases an abscess in the jaw bone, due to infection from the decayed tooth. It is now no longer a disease of the tooth, but it is a disease affecting the bones of the face, and unless the patient has a good deal of resistance to infections of this character, large portions of the bone may die and afterwards come away or the patient may succumb to the general infection. Many deaths from this cause have come under my notice.

Poorly nourished children are prone to disease of the bones of the face from such neglected teeth. Several cases of this severe character are treated annually in the Hospital for Sick Children, in Toronto. I saw one case recently where a child lost the whole lower jaw from neglected teeth. While few cases have a serious result, the great majority tend to recover by nature forcing an opening for the drainage of the pus into the mouth or on the face. When such an abscess opens on the face a very disfiguring scar is left. The opening, draining the pus from the abscess, which is situated in the bone, may close occasionally and a repetition of the pain and swelling will be gone through again before the pus can find its way out. But the great majority remain open and the patient swallows a quantity of pus every day. If several in the same mouth have gone through this trouble there will be large quantities of pus swallowed daily. Many people go on for years sucking pus out of their gums and swallowing it with their meals and think little of it, and yet they would revolt at taking an equal quantity of pus from a boiler and swallowing with their food.

Beside the pus taken from this source, there will be large cavities in the teeth which are receptacles for food to lodge in and become decayed. These cavities will, to some extent, be

emptied of the decaying matter at each meal, and this is added to each bolus of food as it goes to the stomach. As this history goes on for years, the tops of the teeth decay off and sharp edges irritate the gums until they become red, inflamed and exude pus and blood on being touched. These sharp corners of teeth and roots are often the starting point of cancer among old people.

A patient with such a mouth as I have described will have attacks of sore mouth, sore throat, and on the slightest exposure will take cold with severe tonsilitis. With such inflamed tissues in the mouth they are more likely to contract any of the contagious diseases, such as diphtheria, scarlet fever, measles, chicken-pox or whooping cough. All of these diseases have a tendency to leave the patient with some severe after trouble, such as abscesses about the face, loss of smell or total deafness. It has been shown in hospital practice that in all cases where the patient's mouth and teeth have been kept clean during the disease, none of these after troubles occur. It has also been shown that where the mouths have been kept clean the disease does not often occur. Tuberculosis germs are more easily implanted in the throat and lungs of a person whose mucous membranes are in a state of constant irritation and infection.

There is an aspect of the unkept mouth of middle aged persons that deserves attention. As we advance in years, our gums shrink, which leaves spaces around the necks of the teeth. These spaces become filled with food, which soon becomes foul, and irritates the gums and the necks of the teeth. Decay of the teeth is likely to occur, and there will appear a good deal of hard calculus of the same character as that which collects in a vessel in which water is boiled. This deposit on the necks of the teeth gradually irritates the gums which recede, exposing the roots. The deposit goes farther and farther up the teeth, really loosens its attachment, becomes loose and drops out, or has to be extracted on account of its troublesomeness. Around each one of these teeth so affected is a hot bed of infection. Pus is developed in abundance and swallowed with the saliva and the food. More teeth are lost by this disease of the gums than by decay, and the effect on the general health is often more baneful, because it comes on insidiously, and in its early stages there is but little pain. It is a filthy disease, which is known as Reggo Disease, or Pyorrhea Alveolaris, and the person who loses his teeth from this cause has not kept his teeth or gums as clean as he might.

Having discussed at some length the consequences of an unkept mouth on the tissues of the mouth and their immediately surrounding parts, let us consider what effect an unclean mouth has on the more remote parts of the body. It may be stated that almost all the diseases of the human family gain entrance to the body through the mouth or nose, and among these are the most fatal, such as tuberculosis, pneumonia diphtheria, scarlet fever,

typhoid fever, etc., and there is the whole list of diseases of the intestinal tract—indigestion, dysentery, diarrhea, constipation, and the consequence of these on other organs, such as the liver, kidneys, heart and blood. The mouth stands as the vestibule of the body, and unless it is kept clean there can be little hope of keeping the inside in order.

For centuries the general practitioner of medicine has satisfied himself with treating diseases after they have developed. It is only within more recent years that he thought it any of his duty to instruct patients how to prevent having diseases. In a measure, the State has undertaken the prevention of diseases as a business proposition. It segregates those having infectious diseases, it examines emigrants, it is in a half-hearted way examining foodstuffs, and will, some day, compel vendors of foodstuffs and drugs to supply a pure and clean article. This is all good. But of what value is all this clean food to the person who keeps an incubator in his mouth running twenty-four hours a day, developing the very disease germs which the State is taking so much pains to keep from our food and water supply.

The State has become interested in domestic science, and especially in the preparation of the food for the table, because it knows that the health of the nation depends, to a large extent, upon what they eat, but of what value are all these especially prepared and sterilized foods, and, I might say, the whole subject of dietetics, to a person who covers each portion of his food with pus, or other deleterious organisms from oozing abscesses and filthy caverns in his mouth. These unclean boluses of food are carried to the stomach and there the digestive juices must take care of them. For a time the stomach may not be infected by them, but sooner or later, depending upon the resistance of the tissues to such infections, its walls are infected. The intestinal wall soon becomes irritated because of being bathed in improper fluids. Indigestion and all its consequences ensue. The only reason we are not poisoned by the infections of our own mouths is that we become innured to them. They do not infect our own tissues as they would others. It is a god-send that it is so, or many of us would not live out our allotted time.

In recent articles, on the relation of oral sepsis to tuberculosis, it is stated that it stands as one of the causative factors and one of the hindrances to combating the disease. A patient with poor digestion, because the chief factor in treatment is to build up the strength. There is little chance of building up the strength if there is poor digestion from an unclean mouth. An inspection was made of the mouths of several patients in a sanatorium and many of them were found in a wretched condition. It was found that those whose mouths were kept clean had the best digestion.

While it would seem that the unclean mouth had a baneful effect on the associated parts and alimentary tracts generally, it

has been recently pointed out by Wm. Hunter, of London, that more serious consequences often accompany a mouth which looks fairly clean. Decaying and dead roots of teeth are often left in the mouth because they do not cause actual pain. However, there may be abscesses about the ends of these, the pus and toxins of which are absorbed in the general circulation, and the patient has attacks of low fever, inability to attend to studies, rashes on the skin and in some cases pernicious anemia is developed, which is always fatal. Dr. Hunter is satisfied that this disease nearly always has its origin in want of care of the mouth. There are other diseases which have been traced directly to an unclean mouth, but I must pass on to what we have to recommend by way of caring for the mouth.

We hear a great deal in these days about disease germs and disinfectants and all that. I have spoken rather frequently of them to-day. You would be pardoned if you concluded that all that would be necessary in the mouth would be to rinse it out with some disinfecting solution that would kill all the organisms. This was, unfortunately, the conclusion which followed the discovery of the cause of caries and other diseases of the mouth. And it is upon this hypothesis that the manufacturers of the mouth washes and tooth pastes in the United States sold thirteen million dollars worth last year. When you read on the label of any of these bottles that its contents will disinfect the mouth, sweeten the breath, and make the teeth look like pearls, don't be deceived. It is impossible to disinfect the mouth with the contents of any of these bottles, or, for that matter, with any other substance that might be safely used in the mouth. Micro organisms of disease are living vegetable bodies, and whatever substances will destroy these will also destroy the living tissues of the mouth. Disinfections are poisons, and are useful only in so far as they destroy life. None of these so-called disinfecting mouth washes are marked poison on the label. Nor will any of them disinfect.

. Then our dependence must be in something else. If the drugs we can use in the mouth will not destroy the bacteria, we can do the more rational thing, prevent their growth by not allowing them the necessary soil to live upon and by constantly disturbing them. This we can do most effectively by masticating tough, hard foods as already described. But since we will not do this, the same friction and massage can be supplied with tooth brushes and water. There is nothing better to free the mouth of particles of food and bacteria than an abundance of water rinsed back and forth between the teeth after a meal, before going to bed and in the morning.

The size, the form, and the stiffness of the bristles of a tooth brush should be adapted to the work to be done with it. In general, the tooth brushes in use are too large. The gums of a child

do not require the rough massaging and brushing that is required in a robust man, consequently, a small, soft brush will be the most suitable to brush the gums. You understand, of course, that it is at the junction of the teeth with the gums that brushing is most needed. If the brush is carried back and forth with a short stroke, the bristles will pass between the teeth and work out particles of food. If a coarse brush, with unequal length bristles is used, the motion should not be back and forth, but rotating downwards for the upper teeth and upwards for the lower; by this motion the gums are not torn away from the teeth, as they would be by the back and forth movement. Every surface of every tooth should be reached if possible. If it is kept in mind that the teeth are cleaned to prevent decay, to prevent disease, both local and general, and because it is more refined to be clean than dirty, the teeth not seen by others will be as clean as those in the front of the mouth. No refined person would tolerate a dirty mouth any more than he would dirty dishes.

If the teeth become stained for any reason, and these stains will not come off by brushing with water, some fine grit might be used, such as powdered pumice stone, chalk, or powdered charcoal. The dampened brush may be pressed into the powder, and carried directly to the mouth. After using any grit care must be taken that any particles are washed away, because they sometimes cause irritation if allowed to get under the free edges of the gums.

PLASTER IMPRESSIONS.

BY W. A. BROWNLEK

The highest aim of the dentist should be the preservation of the natural teeth in the most serviceable condition. Unfortunately, cases come to us for treatment in which nothing short of an artificial denture will be satisfactory. Then it should be the aim of the dentist to construct the most perfect substitute his skill can turn out.

The first step in such a denture is a perfect impression, and for this purpose plaster would seem to be the most suitable material; it has, however, some faults which must be overcome if a perfect adaptation is to be secured.

The use of a large bulk of plaster in the impression tray is liable to produce failure from two causes; the shrinkage of plaster and the drawing of the muscular tissue of the soft palate.

To prevent failure from these causes, first take an impression in modelling compound, remove it from the mouth before it becomes hard, expand the rim with the thumb, and heat the

tray a little to make the compound adhere to it. Now, mix plaster to the consistency of thick cream, using a dessert-spoonful of saturated solution of potassium sulphate in the water to hasten setting, flow the soft plaster over the compound impression and return it to the mouth. Have the patient's head inclined slightly forward and instruct him to breathe through the mouth. Raise the tray in front first and bring it up gradually at the back, supporting it in the centre with the first finger of the left hand, at the same time tapping the handle of the tray rapidly with the fingers of the right hand, to make the plaster flow into all the spaces. Allow the plaster to set quite hard before removing it from the mouth.

If difficulty is experienced in getting it free from the palate, raise the buccal muscles on either side with the finger and instruct the patient to cough and the impression will be relieved immediately.

It is important that the tray be raised slowly at the back, otherwise the soft plaster will be forced quickly against the soft palate and the patient will gag, the muscular tissue will contract and mucous will be forced over the posterior part of the impression. If the patient is liable to gag brush the palate over with a weak solution of cocaine a few minutes before inserting the tray. Just a word about the model. Varnish the impression with a thin solution of brown shellac until it begins to present a glossy surface, oil as lightly as possible and soak in water a moment. Mix the plaster for the model so stiff that it will keep up with the spatula, drop some on top of the impression and tap the tray on the bench to make it flow into all parts and exclude air bubbles. Examine the hard palate with a ball burnisher and scrape the model to make the plate bear heavier on the soft tissues between the median line and the alveolar ridge at the posterior margin of the plate.

Selections

THE EARLY LOSS OF TEETH.

BY CHARLES A. HAYMAN, J.P., M.D., F.R.C.S., L.R.C.P., L.D.S.

Read before the Western Branch, at Bath, July 26th, 1907.

"Why do people lose their teeth at so early an age?" That was a question constantly put to them by their patients, and their answer to it was varied. They were, of course, all inclined to give the answer that came to their mind at once, but really and truly they would find great difficulty to give a satisfactory answer without going into the subject at very considerable length.

There were various causes, and he proposed, for the convenience of discussion, to divide them into (1) Predisposing or general causes; and (2) Exciting causes. Under the first head he should like to emphasise that one great reason why our teeth did not last a life-time was physical degeneration. What did he mean by that? They were all well acquainted with it. They had only to look at their patients and at statistics. They found that many thousands of children had not enough energy to live more than a year, they had not sufficient vitality, and those who lived longer were suffering from disease in some form or another. When they arrived to manhood's estate we found there were various organs giving trouble. Some people escaped and some had only one "weak spot" in their constitution, others might have two or three. Amongst their friends they met those who had lost their teeth, either through their being imperfectly calcified, or their jaws being badly developed. Others might suffer from their bones not being properly developed, there might be too much lime, or there might be too little; others suffered in their blood-vessels, having varicose veins and hemorrhoids. With regard to this physical degeneration he had an idea that if they would get at the real cause they had to go back a long way. They must not only begin with early childhood, but begin before the child was born, look into the history of the child. A healthy man married a healthy woman, and a healthy perfectly formed child was coming into the world, and if it had healthy parents and was perfectly formed it should be free from physical degeneration; taking for granted that the mother was living in a reasonable way during pregnancy, avoiding undue excitement and exertion, but at the same time not making an invalid of herself. There are two or three points at the actual birth of the child, which if carried out, in his opinion would be very instru-

mental in preventing physical degeneration. If they asked a doctor who had given a special study to midwifery, he would tell them that one great point in producing a healthy child, was not to sever the connection between the child and the mother too quickly. If the umbilical cord was cut too soon the child would lose the blood which was being forced from the placenta into its circulation, and it was very necessary for the infant to have these 3 ozs. (that is the estimated amount) to make a good start. As they all knew, if they wanted to win a race a great deal depended on the start. If the child lost these 3 ozs. of blood it was greatly handicapped in fighting against physical degeneration. If a child was thoroughly well developed, the teeth would be affected as well as the other organs of the body. He hoped they would forgive him for taking them outside the realm of dentistry. There was another point to be considered. If they wished to give a child a good start in life it should have the first milk that was secreted by the mother. He laid great stress on that first milk, for it contained the purgative provided by Nature. Some people would avoid giving it to the child, but it was the very thing it needed. Before the child was born the internal organs were making a preliminary effort, the liver had been making bile, the waste products went into the intestines, which were charged with meconium, and this matter should be cleared out at once if the child was to have a good start. If that were insisted on there would be less liability to convulsions, etc. In order to make the child take the first milk, this natural purgative, it was necessary there should be no interfering nurse or fond relation giving the child something sweet to suck or lap directly it was born, such as a little sweetened milk, because this first milk was naturally bitter, and the little patient objected to the contrast. The force of his remarks was that Nature, if let alone, would produce a strong and healthy child. If we interfered, we handicapped the child and it would grow up suffering from physical degeneration. If the child was to develop a good set of teeth and grow up with a healthy body, it should be brought up at the mother's breast. There was nothing like mother's milk for developing a strong healthy child. Patent substitutes might be all very well when it was impossible to give mother's milk, but it was best for the mother to suckle her own child.

Having said so much about physical degeneration, he would call their attention to some of the exciting causes of the loss of teeth and contraction of the jaws. He was very much impressed in reading a dental book in which the author explained the action of sucking on the child's tongue and jaws. When the child began to suck the breast the tongue naturally grew very much indeed, and the front of the tongue would push out the front of the jaw. But at the same time the tongue was enlarging and growing broader, and as it grew broader the arches of the

jaws were pushed outwards. But they did not want this pushing forward and outwards to go too far, and the pressure against the elastic breast of the mother, had a counteracting effect on the front of the mouth, and the sides of the mouth were pressed back by the cheeks or buccinator muscles, and the whole arch was moulded into the parabolic curve. Nature again worked for them in giving a thoroughly good shaped pair of jaws that would be commodious enough to accommodate the teeth in after life. They might say, What had this to do with the loss of teeth which we did not get until we were from 5 to 7 years of age? But in early life they were laying down the principle by which the child should be thoroughly developed in every particular, not only in its teeth, but its whole bodily frame; every organ of its body had to be thoroughly well developed, for unless that was so they would get physical degeneration.

When they thought of the second set of teeth and how they had to be developed, they were surprised with the accuracy with which Nature carried out this work, how the enamel was formed by the dipping in of the epithelium and forming the enamel organ, and at the same time the tooth substance was formed from the tooth papilla, and that while the enamel consisted of very hard enamel fibres, the substance of the tooth was composed of a pulp and dentinal tubes, and these two substances were formed and were joined, united and vitrified, and any flaw or fault in the process made the tooth an easy prey for decay. It was a wonderful process, and at this age it was very necessary that the child should be strong and healthy in every particular.

There was another point he wanted to speak about in connection with the shape of the jaws. It was necessary to say something against the child's comforter or "boon," a black piece of elastic, like the rubber teat of a milk bottle. It had been acknowledged by medical men that this terrible "boon" was the cause of growths in the post-nasal region called adenoids. If they only tried the effect themselves, by sucking anything hard from which nothing came, they would find a sensation as if they were pulling down the mucous membrane at the back of the nose. Then how much more must a child feel it, and was it to be wondered at that the mucous membrane did come down and cause an undue growth? The same effect was produced if they allowed a child to suck an empty bottle. He should think no deviation from the path laid down by nature was more likely to cause physical degeneration, especially marked in the poor development of the jaws and teeth. If there was overcrowding of the teeth there was often early decay, and the teeth were easily affected by the collection of food setting up chemical action. If they could ensure the child being properly treated during infancy, they were more likely to ensure for it a perfectly developed set of teeth and jaws. If they had that, he did not think all the

preservatives in food, and other causes they were apt to blame, ought to have any effect. He considered that to produce a healthy person it was, first of all, necessary for the mother to be natural during pregnancy; (2) to see that the umbilical cord was not severed as long as there was pulsation to be felt in it; (3) that the child should be put to the breast two hours after birth, so as to get the first milk, containing valuable properties, and (4) that the child should be suckled for at least six months. If these points were observed, the child would have a better chance of growing up strong and well developed.

DISCUSSION.

Mr. Müller said they owed sincere thanks to Dr. Hayman for his address. Although perhaps not immediately connected with their everyday work, it was indirectly, and he did not think that he had ever listened to a paper that had given him greater pleasure.

Mr. Goard was sure they all thanked Dr. Hayman for his able address. If his advice were followed it would bring about a social revolution in the present day. That, perhaps, would be rather a good thing. Dr. Hayman's remarks were very true, and the probability was that with a healthy child you would have healthy teeth. We were paying the penalty, perhaps, now of over-civilization. It had been shown if they took a strong healthy native of the darker races who had a perfect set of teeth, that as soon as he began to be educated he would suffer in that very particular. To emphasize the point, how often did they find that teeth were most acutely sensitive in students working for examinations and in nurses doing night duty. It was a point he had noticed over and over again. Just at that time the teeth were very sensitive, showing there was some drain on the sources that ought to harden the teeth at the time. If they were allowed to be called in as dental consultants to midwives they could see that the points to which Dr. Hayman had referred were carried out. He quite agreed that they should enter a protest against the mothers shuffling out of maternal responsibilities for social enjoyments. That was a great difficulty, and it was why he called Dr. Hayman a social revolutionist.

Mr. Wilcox thanked Dr. Hayman for this paper, and mentioned a little experience of his own at a school in Bristol, as it might have some bearing on his view. He was requested by the School Board to examine the mouths of children in a school where they were all more or less mentally deficient. Out of the whole eighty of them there were only two, one boy and one girl, with perfect mouths. Why they were there he did not know, he did not think they were intractable. They were brother and

sister, who had come up from Somerset, away in the country, a few months before. The other children presumably were the city product. A more deplorable number of mouths he never saw. He sent in a report, and he was duly thanked, but nothing more came of it, and what had happened to the children he did not know. They were all badly developed. He had no doubt that if cases were tabulated they would find that where the teeth were bad the general development was indifferent also.

Mr. Oliver said that the subject was a most interesting one and deserved very careful research. He had no doubt that our civilization was very much at fault. You could not deprive children of the natural simple life which was formerly lived without causing a general deterioration of the physical constitution. We all liked to go back to the simple life, and if we would only train our children in it we should save ourselves and them a great deal of trouble. Of course, he did not say we should ever do it. He was afraid there seemed to be no remedy for it under our present system. As a profession they ought to stand in the breach and see whether they could not by prompt attention to children during the age of school life effectively prevent those ravages of decay which were inherent in the constitution. If they were on the spot and could deal with children at a critical period of life, from 8 to about 16, he was confident from experience that they could save those mouths and give them useful teeth for practical purposes throughout at least the middle period of their lives. If they accepted certain facts that could not be denied and devoted themselves to the children during the period when destruction was most active, they would do an incalculable good. He had had experience himself a great many years, and had found when he could see these children from 6, 7 or 8 years of age, and watch the teeth year after year, the result was simply ideal. Their teeth were never permitted to get bad, and he rarely ever had to perform extraction. If they saw the first molars come up and chiselled out any defects that were noticed, they could rely on the mouth remaining perfect for a number of years. If they pursued the whole thing in that way and saw the mouths every four months until the children were 14 or 16, the mouths were left in a condition that would defy the mischief of future years to a very large extent, and make the patient independent of those substitutes which most people require far earlier. If they only took up that stand as a profession, formed that decided view and stuck to it, he thought the medical profession would also begin to understand, and when the time came for the medical inspection of all children by the State, which they knew would very likely occur, they would not omit to see that the children's teeth were a very important factor in the maintenance of the health of the general community. When that came about they would naturally call

in the dentists and they would be prepared to give their attendance. It was a most interesting point, and if he had his life over again he would give up everything else simply for the pleasure of giving effect to that most beneficial purpose of saving the natural teeth. Of course, if in after-life they failed to save them, they knew the next best thing was to give them substitutes. Whatever the causes of these things were he did not think they need trouble about them as much as about the effect which they produced, and the way in which it was best to eradicate the mischief that had occurred. He thought that was the future of their profession, the most ethical view they could take of their profession and also the most correct one.

Dr. Hayman, in reply, said Nature was a veritable Shylock, only with this difference, that Nature secured her pound of flesh and Shylock did not. Nature would punish us severely if we did not obey her laws, and they were bound to feel that if those first laws of Nature, which come into operation at the birth of the child, were not carried out, the child suffered right throughout its life.—*British Dental Journal*.

THE ERADICATION BY SURGICAL MEANS OF THE NASOLABIAL LINE.

BY CHARLES C. MILLER, M.D., CHICAGO.

The nasolabial line is seen quite frequently in comparatively young women. It is an expression line which changes the appearance of the entire lower face and may well engage the attention of the surgeon.

A few years ago attempts were made to eradicate this line by filling along the fold with paraffin, but this is not an entirely satisfactory operation—in fact, it is almost invariably a failure. Simple filling of the tissues along the bottom of the crease seldom produces even a temporary eradication, but the successful depositing of a thin plate under the tissues of the skin for a considerable distance on either side of the line may so stiffen them as to overcome it, but this is accomplished with difficulty, as paraffin tends to lump in these soft tissues and does not spread accurately, and we have not the means here to influence it as we have in other parts where it is more accessible. Paraffin protected by bulky soft parts cannot be molded accurately.

Nasolabial lines are due in large part to the excessive action of the muscles external to and above the nasolabial line, and a subcutaneous section made external to this line and parallel to it will divide more or less perfectly these fibres. Successful division

of these fibres diminishing their action will remove to a degree the cause of these lines; then eradication may be aided somewhat by a plastic operation within the mouth, and a condition of the parts may be attained which will predispose toward the complete disappearance of the lines if they have not become too deeply marked.

To accomplish the subcutaneous section of the fibres the sectioning knife may be entered at several points. This knife should have a very narrow blade, and in the absence of a better instrument the Graefe cataract knife may be used.

Entered externally the knife makes so small a wound that the scar should not be noticeable subsequently, but should the operator care to take the very slight chances of an infection and subsequent inflammatory action the fibres may be divided through an incision made within the mouth. The division when made from within is not accomplished with the same degree of accuracy as when the knife is entered through the skin, as it is possible from this latter entering point to carry the blade along beneath the muscular fibres and then to divide these fibres in a line directly parallel to the nasolabial line. When the knife is carried through the tissues from within the division must be made with its point, and this interferes with accuracy and thoroughness. When the section is made through a puncture in the skin the knife should be entered at what I may term the dimple point—that is, the point where a dimple develops or should develop when the patient smiles. The knife is carried along parallel to the nasolabial line and should pass in deeply, so that it approaches very close to the mucosa. Section is accomplished by a sawing motion, and the edge of the knife, not the point, should accomplish the division. When the edge approaches close to the skin it is withdrawn and pressure applied externally to control subcutaneous bleeding. The puncture in the skin is sealed with a drop of collodion.

The sectioning is repeated on both sides, and then the lip is turned upward by an assistant, and after infiltration the mucosa is incised in a semilunar direction. The convexity may be in either direction, the section beginning beneath the *alæ nasi* and extending downward for about three-quarters of an inch so that it terminates about one-eighth of an inch above the angle of the mouth. This interval in the mucosa is deepened by as blunt a dissection as possible, so that as few of the blood-vessels as possible are divided. The angles of the semilunar incision are brought together so that the tissues are bunched under the nasolabial line.

It is a simple matter to make the incision with the convexity downward, but the operator must remember when the incision is so made that the completion of the operation may alter the appearance of the lips to a disadvantage. If this is likely to occur

he should elect the opposite course, although it will be somewhat more difficult to close the incision when made high up unless the surgeon has at hand an assistant capable of retracting the lip for him satisfactorily.

The operator may find it more convenient to do the plastic operation within the mouth first and section the fibers external to the nasolabial line subsequently. This is a matter of election.

Compression with a bandage is indicated for a few hours after this operation to minimize subcutaneous bleeding. These parts are vascular and bleeding beneath the skin is to be expected. If compression is used no complication need be feared from this bleeding.—*The Therapeutic Gazette*.

Proceedings of Dental Societies

PRINCE EDWARD ISLAND DENTAL ASSOCIATION.

The regular annual session of the P. E. Island Dental Association was held at Summerside, on the 25th September, when the following officers were elected for the year 1907 and 1908: A. W. Leard, President; J. H. Ayers, Vice-President; J. S. Bagnall, Secretary-Treasurer; Registrar, F. E. Smallwood, and F. A. Lefurgey were elected to complete the Council.

Four notices of resolutions to come before the Dominion Dental Council at its next meeting were fully discussed, and by vote the Representative was instructed by the Association how he would best express the views of the members in attendance.

When the business was completed it was arranged that the next annual meeting be held at Charlottetown.

J. S. BAGNALL, *Secretary*.

THE DENTAL ASSOCIATION OF THE PROVINCE OF NOVA SCOTIA.

The seventeenth annual convention of the Nova Scotia Dental Association was called to order by President Beckwith, at 9.30 a.m., Thursday, August 8th, in Y. M. C. A. Hall, at Yarmouth, N.S. After the reading of the minutes, the following officers were elected for the ensuing year:

President—Dr. E. S. Allen, Yarmouth.

Vice-President—Dr. B. L. Neeley, New Glasgow.

2nd Vice-President—W. E. Dimock, Windsor.

Secretary—W. C. Oxner.

Dr. R. E. Macdonald, Halifax, was elected a member of the Executive Committee.

Auditors—Drs. S. G. Ritchie and F. W. Dobson, Halifax.

Drs. Ryan, Woodbury and Fluck were elected representatives to the Dental Board.

At 9.30 a.m., August 9th, the following clinics were given in Dr. Harding's office:

"Porcelain Inlay," chair clinic, by Dr. H. A. Kelly, of Portland, Maine. The cavity a disto-incisal in an upper lateral incisor included nearly a third of the tooth. Jenkins porcelain was employed in its restoration, and resulted in a filling of good color and fit.

A chair clinic on "Gold Inlay" was given by Dr. Thorburn, of Lowell, Mass. From an impression of the cavity a model was obtained with S. S. White inlay metal. After swaging the matrix it was placed in the tooth and built up with modelling composition to the desired contour and occlusion, and a top adopted, the compound was removed, the parts held together and filled in from a cavity in the base of the matrix with solder. The finished inlay had good margin and was correct as to contour and occlusion.

By courtesy of the Yarmouth dentists, the Association enjoyed an auto ride during the afternoon. A banquet at the Grand Hotel in the evening ended one of the most successful meetings in the history of the Association.

W. C. OXNER, *Secretary*.

The report of the Dental Board with regard to the establishment of a Maritime Dental College at Halifax was favorably discussed, and a resolution instructing the Board to establish a college as soon as possible was carried.

Dr. Robert J. MacMukin, a former resident of Nova Scotia, a member of the N. S. Dental Association, and demonstrator in the Harvard Dental School, was present at the meeting, and donated \$50 as a nucleus for the college fund.

Immediately after the conclusion of the morning session, the annual meeting of the Dental Board was held and the following officers and committees were elected:

President—Dr. H. Woodbury.

Secretary Registrar—Dr. Geo. K. Thomson.

Treasurer—Dr. A. W. Cogswell.

Matriculation Examiner—Prof. H. Murray.

Final Examiners—Members of the Board, Committee on Education, Halifax members of the Board.

At 2.30 p.m., clinics were given by the following: Dr. B. Neely, a new method of making alluminum plate; Dr. W. C. Oxner, the gold inlay principles as applied to bridge attachments; Dr. W. H. H. Beckwith, Hollingsworth system, filled cusp gold crown.

The report of the Committee on Dental Education of the public and School Children, was as follows:

Mr. President and Gentlemen,—Your Committee on the Dental Education of the public and school children, beg to report that considerable progress has been made during the year in bringing to the attention of the Government and School authorities, as well as the public generally, the importance of the care of the teeth of children.

At a public meeting of the Canadian Dental Association, held in Laval University, Montreal, last September, Dr. Dubeau, of Montreal, and Dr. Thomson, of Halifax, read papers on the subject, and at a subsequent meeting a resolution endorsing the action of Ontario, Quebec and Nova Scotia in this regard, and urging the other Provincial Societies to take similar action, was carried.

Drs. Hibbert Woodbury and Thomson, on invitation from the Superintendent of Education, delivered addresses before the Provincial Education Association at Halifax last autumn, which so convinced them of the importance of this matter, that they passed resolutions of sympathy and endorsements of the Dental Association's work, and recommended the appointment of dentists throughout the Province for the purpose of examining periodically the teeth of the school children.

In his address before the Provincial Board of Health, Supervisor McKay referred to these addresses, and they will be published in the proceedings of the Educational Association, together with extracts from the booklet on the care of the teeth.

Dr. Hibbert Woodbury accepted an invitation to address the Provincial Board of Health, and his address was followed by an interesting discussion and resolutions of endorsement.

An amendment to the Educational Act, providing for the periodical examination of school children's teeth, and the appointment of dentists for that purpose, was passed at the last session of the Legislature.

Subsequently your Committee called a meeting of those dentists in the City of Halifax who were willing to assist in the work, and the Board of School Commissioners appointed the following dentists to City schools of Halifax:

Doctors H. Woodbury, F. Woodbury, A. A. Merrill, S. G. Ritchie, F. W. Ryan, A. MacNeil, W. C. Oxner, W. H. Beckwith, A. W. Cogswell, G. H. Fluck, R. E. Macdonald, W. H. S. Gray, F. W. Dobson, and G. K. Thomson.

Meetings have since been held, at which regulations have been made governing the examiners in their work, and the periodical examination of the teeth of school children, the first in Canada, will be begun soon after the schools reopen. The dentists who have been appointed to the Halifax schools will conduct the examinations voluntarily. The examination is not compulsory.

One thousand booklets on the "Care of the Teeth," were purchased in London, Eng., but no systematic distribution of them has been made.

There has been no opportunity for the revision of school books. Your Committee recommended that when the opportunity occurs, it be taken advantage of at once.

We would also recommend that a booklet on the care of the teeth be published by this Association, and that a method of distributing them be decided upon at this meeting, also that arrangements be made for the periodical examination of the teeth of school children throughout the Province.

With this report are submitted copies of booklets, examination cards and regulations for examiners.

Your Committee feel grateful to Dr. McKay, Superintendent of Education, and to Mr. McKay, Supervisor of Halifax City Schools, for their valuable co-operation.

GEO. K. THOMSON, *Chairman*.

(Signed) H. WOODBURY,
S. E. RITCHIE, *Com.*

TORONTO DENTAL SOCIETY.

The Toronto Dental Society is about to open its winter session. A number of prominent men of the profession have been invited to present papers on subjects which ought to catch the ear of all practitioners.

The first meeting will be held at the St. Charles Restaurant, on November 5th, at 6.15 o'clock sharp, when the guest of the Society will be Dr. Hart J. Goslee, of Chicago, who will present a paper on "A Perspective of Crown and Bridgework."

Dr. Goslee is well fitted to present such a paper, being Professor of Crown and Bridgework in the Chicago College of Dental Surgeons, and being the author of numerous literary works on the subject.

The December meeting is to be given over to a clinic, in which gold inlays will be given special attention, and showing the different methods of construction.

For the remaining meetings efforts are being put forward to secure Dr. Edward C. Kirk, of Philadelphia, and President Falconer of the University.

The Committee are sparing no effort or expense to secure the best possible talent, and trust that the profession will help them out by signifying their intention of attending all of the meetings.

The clinics will be open to those holding membership tickets only.

ACCIDENT POLICIES AND PROFESSIONAL RISKS.

A decision of the United States Court of Appeals at St. Louis may be of interest to physicians. A dentist while operating on a patient received some particles of septic matter in his eye that were coughed or spat out by the patient, and it was alleged blood poisoning occurred, disabling him for many weeks. He recovered judgment against the Fidelity and Casualty Company of New York in the Federal Court at Denver for \$1,000, which judgment was reversed by the Appellate Court. This court held that a wound, within the meaning of an accident policy covering blood poisoning, must be an abrasion of the skin or membrane by which the germs are introduced into the blood. This may be a good legal technicality, but it will hardly receive medical approval. The ability of mucous membranes to absorb germs should be taken into account in any accident policy of this sort. The use of such a technicality on the part of an insurance company to evade its obligations is, we may reasonably assume, a violation of the implied understanding with which every physician takes out such a policy. All physicians are liable to serious risks, often unavoidable, and the question of determining the existence of an abrasion is sometimes a difficult one. It may exist without its subject either being aware of it or of being able to prove its existence afterward and the fact of blood poisoning through the skin is itself presumptive evidence of such lesion. On especially vulnerable parts like the eye, the fact that an actual abrasion is not necessary for the production of serious results from the contact with toxins or germs should be recognized in every policy issued by an accident insurance company. It will be well for physicians to see that their accident policies cover all reasonable professional risks and take them out in companies that specifically recognize such liabilities.

THE Hon. S. W. McInnis, President of the Canadian Dental Association and Minister of Education for Manitoba, died Nov. 5th, 1907.

Dominion Dental Journal

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*All Communications relating to the Business Department of the Journal must be addressed to
THE NEBBITT PUBLISHING COMPANY, Limited, 44 Adelaide Street West, Toronto, Canada.*

VOL. XIX.

TORONTO, OCTOBER, 1907.

No. 10.

A FORWARD MOVE.

It should be the duty of every trained nurse to properly care for the mouth and teeth of their patients. Unfortunately, very few nurses have had a training that would enable them to properly perform this important part of their duty. Dr. Wallace Seccombe, the recently appointed member of the Board of Directors of the R. C. D. S., recognizing the necessity for dental training among nurses, interviewed the principals of all the nurses' training schools in Toronto, and, after many conferences, and a good deal of discussion, of adding another subject to an already over-crowded curriculum, it was decided to establish a course in dental prophylaxis in all the hospital training schools in Toronto. The Doctor's work was not even then completed—he had yet to find dentists as lecturers who would be willing to

accept the positions and do the work satisfactorily to the hospitals. Acceptances were gotten from quite a number more than were required to do the work, and from these the hospitals made their selections. In a few cases there were dentists already members of the hospital staffs. These were accepted.

The appointees met at the Dental College, October 10th, 1907, and mapped out a course of lectures and demonstrations that will cover what, in their opinion, should be known by a competent nurse. There will be five lectures in the course, with an examination at the close. The appointments made up to the present are:

Western Hospital for Consumptives, Dr. W. H. Hackett, Toronto Junction.

The Western Hospital, Dr. R. J. McLaughlin, Toronto.

St. Michael's Hospital, Dr. R. J. McDonagh, Toronto

Hospital for Sick Children, Dr. A. E. Webster, Toronto.

Isolation Hospital, Dr. A. A. Stewart, Toronto.

Hospital for Incurables, Dr. A. W. Thornton, Toronto.

REPORT OF COMMITTEE ON NEGOTIATIONS WITH THE UNIVERSITY.

To the Directors of the R. C. D. S.:

Gentlemen,—Your Committee organized by appointing Dr. Burt, Chairman, and J. B. Willmott, Secretary.

In carrying out the directions of the Board, as found in paragraph (e) of Resolution 3, adopted by the Board at the Annual Meeting in April last, Dr. Secombe called upon the Hon. the Minister of Education, and was by him assured that the Government would be quite willing to assist in carrying out any arrangement made with the University of Toronto.

A circular letter was prepared, setting out the circumstances and embodying the resolutions adopted by the Board, and asking an expression of opinion from Licentiates.

This, with a suitably drawn ballot paper, was sent to each L.D.S. in the Province, who was not in arrears of his annual fee and thus qualified to vote for Directors, about 400 in all. From these 200 ballots were received, 189 voting in favor of the negotiations named in paragraphs (a) and (b), of Resolu-

tion No. 3, practically 95 per cent. Your Secretary had, by appointment, a long interview with the Hon. Chief Justice Moss, lately Vice-Chancellor of the University, during which the question was fully discussed. He then addressed a letter to the Chairman of the Board of Governors, John Hoskin, K.C., LL.D., explaining the circumstances and asking for an interview. Instead of this, the letter was read at a meeting of the Board of Governors and a Committee consisting of Dr. Hoskin, Chancellor Meredith, President Falconer, Chief Justice Moss, and B. E. Walker, LL.D., was appointed to meet the committee appointed by your Board, for an informal conference. A joint meeting of these committees was held on July 16th, 1907, in the Board Room of the National Trust Co. All the members of your Committee were present viz., Drs. Burt, Abbott, Seccombe and Willmott. All the University members were present but the President, who was out of the city. Mr. W. T. White, a Governor of the University, was also present. A free and informal discussion of the whole matter, from all points of view, took place. The apparent difficulty felt by the Governors was the financial one, their funds at their disposal for expenditure on capital account being already fully hypothecated.

Mr. White suggested that if the University undertook the teaching of Dentistry, the plant accumulated by the College for this purpose should go to the University, to be used in teaching Dentistry. Your Committee, having urged that this work could be carried on by the University, not only without charge on the income of the University, but at a very considerable annual financial gain. Mr. White asked that a statement of the finances of the school be prepared for the information of the members of the Committee. This your Committee agreed to and the meeting adjourned. The intervention of the holidays prevented any further action for several weeks.

In the meantime your Secretary had written the principal American Universities, having Dental Faculties, asking as to the relation of the Faculty to the University, financial and otherwise.

Replies were received from all except the University of Pennsylvania. When the new President of the University, Dr. Falconer, had entered upon his duties, a copy of the letter sent to the Universities and the replies were sent to him, with a letter setting out the circumstances under which the negotiations were undertaken, that he might be familiar with the Academic aspect of the question. The financial statement asked for was prepared and a copy sent to each member of the Committee on September 19, 1907.

This statement shows a total surplus in 14 years of \$75,821.00, which has all been applied on capital account. On September 18th, your Secretary wrote Dr. Hoskin, as follows:

"*Re* Faculty of Dentistry in the University of Toronto:

"A meeting of the Directors of the R. C. D. S. will probably be held on October 3rd, and it would be accepted as a favor if the Committee of Governors could, previous to that date, so far consider this matter as to intimate to us, in general terms, the character of a proposition, which, in their judgment, would be a proper one for submission to the Board of Governors for consideration. This would place the Directors of the R. C. D. S. in a position to formulate a definite proposition for the consideration and action of the Board of Governors, or, if the decision of your Committee was deemed unfavorable, further consideration of the matter might be postponed, or abandoned."

On September 20th, Dr. Hoskin telephoned that with the multitude of functions connected with the induction of the President and opening of the Physics building there was no chance of getting a meeting of his Committee for some time. On Oct. 12th, a note was received from the Bursar of the University, stating that on the previous day the Board of Governors had considered and adopted a report presented by the Committee appointed to confer with the R. C. D. S. A copy of the report was enclosed, and is as follows:

To the Board of Governors of the University of Toronto:

Your Committee appointed to deal with the application of the members of the Royal College of Dental Surgeons, of Ontario, who request that a Faculty of Dentistry in the University should be established, beg leave to report that they had an interview with the Committee appointed by the College of Dental Surgeons, in which their views and application were discussed at some length.

Recently the Chairman of this Committee received a communication from the Secretary of the said College of Dental Surgeons, asking for an early answer to their application, in order that they might know what steps to take in connection with the offer made by the Hospital Trust to purchase their property. Your Committee recently met and fully considered the matter, and concluded that, for various reasons, it would not be in the interest of the University, nor would it be advisable at present to establish a Faculty of Dentistry.

Your Committee beg to transmit herewith the correspondence that has taken place.

All of which is respectfully submitted

(Signed) JOHN HOSKIN, *Chairman*.

Dated this 10th day of October, 1907.

As this action of the Governors did not seem to present any opening for further negotiations, there has been no later communication with the University authorities.

Your Committee also consulted Burke & Horwood, architects, as to the cost of new building, substantial and suitable for the purposes of the College, with a foundation area of 9,000 square feet, four stories high, including the basement. This cost he estimates, basing it on the tenders received for the proposed addition, at \$101,000.00.

Your Committee report these facts without any recommendation.

Herewith is presented the correspondence referred to in the report:

All of which is respectfully submitted.

R. BRUCE BURT,

WALLACE SECCOMBE,

J. B. WILLMOTT, *Committee.*

Oct. 22nd, 1907.

[NOTE.—The portion of the report omitted refers to possible sites for a new building and the probable cost, and it is not deemed wise, at present, to publish it.—Editor].

A NEW LOCATION FOR THE DENTAL COLLEGE IN TORONTO.

The Board of Directors of the R. C. D. S. met in the College building, October 23rd, 1907. Among other things under consideration was better accommodation and facilities for teaching dentistry. The University not wishing to establish a Faculty of Dentistry at the present time left the Board with the offer of \$100,000 for this present building, to be accepted or rejected before January 1st, 1908. The present building not being large enough, an attempt was made to secure more land to the east of the present building. Having failed in this it was decided to try to find a new location and erect a new building, in which case the Hospital Trust's offer of \$100,000 for the present building would be accepted. An architect's estimate for a suitable building was one hundred and one thousand dollars.



WHAT THEY DO IN SUMMER.

Through the kindness of Dr. C. A. Kennedy, a number of dentists have been entertained on several occasions at a game of bowls, on St. Matthew's lawn. It is a privilege for Dr. Kennedy's friends to enjoy his hospitality, because he supplies everything needed in the game from bowls to elastic bands to hold rubber shoes in place, or a treacherous pair of trousers. The last game was played in four rinks, under the able skips, Drs. Brethour, McLaren, Paul and Kennedy. Score:

Dr. C. G. Scott	Dr. W. E. Willmott
Dr. W. Windeyer	Dr. A. D. Mason
Dr. F. R. Mallory	Dr. Geo. Grieve
Dr. F. G. Brethour,	Dr. W. A. McLaren,
skip14	skip22
Dr. C. E. Pearson	Dr. Geo. Gow
Dr. A. J. McDonough	Dr. C. O. Corrigan
Dr. S. A. Sylvester	Dr. S. M. Edwards
Dr. E. Paul,	Dr. C. A. Kennedy,
skip21	skip15
<hr/>	<hr/>
Total35	Total37

WANTED.—Graduate or mechanical man for the North-West. Salary \$20.00. Apply The Canadian Dental Supply Company, Ltd., Toronto.

Reviews

Inflammation. An Introduction to the Study of Pathology: being the reprint (revised and enlarged) of an article in Professor Allbutt's System of Medicine, by J. GEORGE ADAMI, M.A., M.D., F.R.S. Sometime Fellow of Jesus College, Cambridge. Professor of Pathology, McGill University, Montreal. Printed by Macmillan & Co., Ltd., New York.

This is a volume of about two hundred and thirty pages, which is, as the title says, an introduction to the study of Pathology, and is well calculated to give the student a thorough ground work in the preparation for the study of the general subject. It contains the thoughts and experiments of the most recent investigators, put together in an interesting and readable form and quite comprehensible by the ordinary student. In fact it is particularly adapted for the necessities of the dentist. Few dentists realize that the large proportion of their time is occupied in assisting nature to overcome infections. Dr. Adami defines inflammation as the local attempt at repair of actual or referred injury. Thus inflammation may be considered a reparative process rather than a destructive one. Instead of having our minds set on treating inflammation, we should have our minds on treating the condition which has brought about the inflammation. Such views are far in advance of the views held by pathologists not so many years ago. No one could read this volume without being struck with the ability of the author to place his subject before the reader in such a way that he can clearly understand it. At the close of each chapter appears a summary of the facts brought out in the chapter. The author has avoided what is too common in text-books, that of reciting a series of facts. He takes the reader into his confidence and argues the question out with him. No work could be more suitably prepared for the student of dental pathology. The reputation of Dr. Adami, of McGill University, should be sufficient to interest every student of disease processes in this clear and yet comprehensive discussion of the subject of inflammation.

FOR SALE.

An established dental practise in Brockville, successfully conducted for forty years; comprises the best appointed stock of sundry dental supplies. Reason for selling, death of proprietor. Splendid opening for energetic dentist. Apply to Box 367.

WANTED.—I have positions to offer frequently to good all-round men, will pay from \$10 to \$50 a week to the right men. Registration unnecessary. State qualifications. Dr. J. D. Maher, Boston Dental Parlors, 527 Main St., St. John, N.B.

Dominion Dental Journal

VOL. XXIX.

TORONTO, NOVEMBER, 1907.

No. 11.

Original Communications

A PROSPECTIVE VIEW OF CROWN AND BRIDGE WORK.

BY HART J. GOSLEE, D.D.S., CHICAGO, ILL.

Read before the Toronto Dental Society, November, 1907.

In the evolution of the specialty of crown and bridge work, the enthusiasm and ingenuity of the profession has resulted in the presentation of a myriad of methods and procedures. These encompass so varied and versatile a field that the practice in this particular line of work has always been more or less empirical, and, to a large extent, it still so remains.

This is evidenced by the fact that for many years each issue of our journals has teemed with the individual methods of those who had the ability or temerity to write, until he who is eager to keep apace with the progress of the day is now confronted by a bewildering melee of procedures. Many of these have possessed, and do possess, merit. Others have proven to be invaluable. Those which have not stood the test of average practicability have soon been abandoned, and yet, *all* have contributed more or less to the wonderful progress of this specialty, and in turn of dentistry as a whole.

While the mental armamentarium of the modern practitioner should embrace a reasonable familiarity with all of those methods which may even possibly be useful, yet the time has come when we should begin to systematize our work so as to abandon the obsolete, relegate the indifferent, and improve the really practical ones.

If such were done to-day, I want to prophesy that it would be surprising how many of the procedures now in more or less

common use might be consigned to the garret of the past, and how comparatively few we could get along with. Indeed, I am forced to predict that the practice of the future will embrace but a small proportion of our present numerous methods, and that even then our efforts will be more successful, and our work better.

In this, however, I do not mean to infer that any one specific system or particular method will ever be universally applicable to the varying conditions which confront us, or that any distinctive line of procedure can invariably be followed; but I do believe that the status of our development at the present time indicates that we can do better work with fewer methods, if we will but recognize the possibilities of the present, and employ good judgment in their application.

If there is one thing above another which is needed at the present time, however, to rescue this important specialty from the empiricism of the past, and to place it upon a sound, practical, and scientific basis, it is a better knowledge of its underlying mechanical and dynamic principles, and a better appreciation of the essential requirements incident to the work which we attempt to accomplish. Indeed, we cannot hope to employ good judgment until this is acquired.

As an evidence of the fact that good judgment does not always dominate and actuate the operator who essays to do crown and bridge work, let me briefly call your attention to a few of the many questions which still remain mooted, and regarding which the profession is even now woefully divided. First, for example, should the pulps in teeth which are to support artificial crowns be devitalized as a procedure incident to the preparation of such teeth, or not? Second, should a crown be made with a band, or without? Third, should a band, when one is employed, extend beneath the gum margin or not? Fourth, should we destroy or mutilate the beautiful crown of a sound tooth for the purpose of obtaining support for a bridge, or not? Fifth, if this is not warrantable, should we use an open face crown, a so-called "hood" or "groove" attachment, or some other method? And, sixth, should we use a "fixed" or "removable" structure in the building of our bridges?

If dentistry is a scientific profession, and if it has progressed and developed with the marvelous rapidity which is accredited to it, does it seem reasonable that such apparently simple and practical questions should remain unsolved?

While it is quite beyond the pale of human reason to expect that any scientific body should agree on all things, or that all would be unanimous in their deductions and conclusions, yet it is not at all unreasonable to expect a solution of these more or less simple phases. There must be a right way and a wrong way, and in these instances one or the other must be right or wrong, in a large proportion, or, at least, in a majority of cases, and that

procedure which is best in a majority of cases is the proper procedure in a very large proportion.

By way of analysis, the question of devitalizing the pulp of a tooth which is to be crowned is not one of personal equation, nor one which is to be decided by the pet hobby of any man, but is simply a question of, first, whether it may be placed in a condition which will be most favorable to its comfort and longevity unless this is done. If such a tooth can be prepared from a mechanical aspect so as to admit of the accurate adjustment of an artificial crown, and if such preparation does not seem to endanger the vitality of the tooth, then to devitalize the pulp would perhaps be unnecessary, and consequently wrong, but unless this may be done, and done in a thorough and conscientious manner—which is *seldom possible*—then devitalization becomes an absolute necessity, and must be resorted to, whether we believe in it or not.

The same may also be said of the question as to the advisability of making a crown with or without a band encompassing the end of the supporting root. In this instance the question is not so much as to whether we believe in a band or not, but is a question of the physiological and mechanical requirements of the crown which the root is to support. These combined demand a union between crown and root which will afford a minimum of irritation and a maximum of strength. If such composite requirements may be obtained to the best advantage without a band, then the use of one is unnecessary, and therefore objectionable, but if the presence of a band will afford a better adaptation of the crown to both the *base* and *periphery* of the root, thereby minimizing the possibilities of irritation, and carrying the joint to a more immune area, thus better protecting the mounting medium, which its proper adaptation has usually heretofore afforded, then such a type of construction is not only indicated, but demanded, as a practice, in order that these combined requirements to the highest degree may be possible.

Also the question as to whether we may or may not be warranted in sacrificing or mutilating the crown of a good sound tooth for the purpose of obtaining support for missing teeth should not be one of individual preference, but should and can only resolve itself into, first, whether a fixed structure would be the best means of supplying the missing teeth or not, and, second, whether an artificial crown would afford the best and most permanent means of obtaining attachment to that tooth.

Until the present time, an artificial crown has seemed to offer the best means of obtaining such attachment in the most artistic and permanent manner, for the reason that a better adaptation between it and the supporting tooth could be effected than was so universally possible by any other means at our com-

mand. Previous to the successful application of inlay work this was true, because most, if not all, of our former methods were so difficult to adapt with any degree of accuracy that they could only be considered as being of a more or less temporary character, and since a remaining natural crown was thus saved—only to be subsequently lost—such a procedure was often warrantable, and would be so to-day under the same conditions.

The same general line of thought is also applicable to the question as to whether a fixed or a removable bridge should be used when missing teeth must be supplied. Such, however, need no longer be considered a problem, but rather as a simple matter of judgment on the part of the operator, for there are distinctive indications and contraindications for the use of each.

If the position and stability of the teeth which remain and which may be used to support the structure supplying the missing ones are favorable and adequate to the mechanical or dynamic requirements of a fixed structure, then such a type of construction is *indicated*, but in all cases where such may be at all doubtful, then a "removable" one is *demande*d. Hence the success of the procedure will depend not so much upon the selection made from the vast array of methods at our command, but, on the contrary, must rest more or less entirely upon the mechanical judgment exercised by the operator. Indeed, my sympathy goes out to him in whom this faculty is not developed, and to his patients also when he essays to do successful dental bridge-work.

Such an analysis of these so-called problems leads us to the conclusion that they are not questions of principles, but rather of judgment. Therefore, it behooves us to cultivate and develop this attribute to a higher degree if we would hope to aid in placing this specialty on a broader scientific and less empirical plane.

If this degree of judgment prevails, first in the application of correct principles, and second in the selection of methods of procedure, let me again prophesy that we will find ourselves discarding old methods, if, indeed, we have not already done so, and using even a lesser number of the new ones, and the practice of crown and bridge work will therefore become practically revolutionized.

If the logic of such a statement is questioned, let me say that such has been made possible largely by the advent of gold inlays and their assured usefulness, and particularly by the splendid achievements of Dr. W. H. Taggart, of Chicago, in the line of successfully casting gold and other metals, and for this reason to him more than to anyone else is due the credit for this revolution in our methods.

Accuracy of adaptation has always been and must always be the keystone of the arch in the successful application of crowns and bridges, and since this is now possible to a wonder-

ful degree—to a degree never before achieved—and since it is applicable to crown and bridge work as well as to the filling of teeth, what must be the possibilities? Indeed, they seem unlimited. But even granting that such accuracy is to be obtained by the casting of metal, why does it follow that our methods are to be revolutionized by this process?

For answer, let me say that a multitude of teeth which were formerly crowned for the purpose of effecting their individual restoration may now be successfully and permanently filled, and that the principal source of irritation and consequent discomfort resulting from crown work in general will be thereby avoided.

Also, that many natural crowns of teeth which would otherwise be sacrificed for the purpose of obtaining anchorage for bridge work, by the substitution of an artificial one, will be saved; and furthermore, that the assured success of a well-adapted gold inlay, and the possibilities of obtaining such adaptation in all cases, will cause it to ultimately supersede other methods of obtaining anchorage or attachment to the crowns of remaining natural teeth.

In addition to this, it will enable us to adapt *accurately fitting metal bases* to the roots of teeth which are within the range of vision, and to employ the various forms of replaceable porcelain crowns or teeth instead of the ordinary pin facings, thus disposing of the question as to whether to use a band or not by removing the objections to one, and eliminating the element of inherent weakness caused by the presence of platinum pins in porcelain facings, and giving us a combination of beauty and strength not to be obtained in a so-called "Richmond," or even in the more modern type of porcelain crown.

It will also enable us to successfully use replaceable porcelain teeth for dummies for bridge work in the posterior as well as in the anterior part of the mouth, thus improving upon former methods involving simple pin facings, usually of poor form or doubtful color, and a more or less conspicuous display of gold incisal edges and occlusal surfaces, and greatly diminishing the frequency of broken facings both in soldering and in mastication.

In this connection, the heating of porcelain facings for the purpose of soldering, and their attachment to the metal structure by this means, has always been recognized as a more or less doubtful, if not dangerous, procedure, and as constituting an element of weakness in the finished piece. Both of these objectionable features, however, may be overcome or entirely eliminated by the strong assemblage of the metal parts only, and the subsequent attachment of the porcelain to them by means of cementation, and as such an attachment is equally secure, and manifestly safer, than the more rigid and unyielding one result-

ing from soldering, and as opportunity for replacement in the event of accident is always present and favorable, it must ultimately become recognized as the preferable procedure, and adopted as the general practice.

These possibilities will also enable us to construct bridges of any size with a minimum of solder and a maximum of strength, and to obtain all of the esthetic advantages and none of the doubtful and objectionable features of porcelain bridge work.

Thus, also, in these enlightened and progressive days when the leading minds of the profession are directed towards prophylaxis, will the *art* side of dentistry contribute to this splendid and growing cause by making possible the construction and application of better fitting and hence more "prophylactic" crowns and bridges.

Again venturing a prophesy for the future, therefore, let me suggest what I think will be the composite of typical and ideal methods.

For single crowns, the all-porcelain, hollow, or "jacket" crown is undoubtedly one of the most practical and esthetic means of restoring the anterior teeth, and while it will probably come into more general use than it is at present, still the high order of skill required, and the fact that such a type of construction is not universally applicable, will necessarily limit the field of its usefulness.

The employment of replaceable porcelain teeth without platinum pins, and to be subsequently attached by cement for individual crowns, and also for dummies, or substitutes for the natural teeth in bridge work, must be considered as the solution of the problem of discolored and fractured facings for the reasons mentioned, and hence is undoubtedly destined to become the practice of the future as soon as we can prevail upon the manufacturers to supply our wants and needs in this direction.

With suitable porcelain teeth for this purpose—and we will get them some day—we will thus have two general types of construction for single crowns, types which will embrace a field more or less universal in application and general usefulness, as applied to all teeth within the range of vision. Combine these with the ordinary gold shell crown, made to fit and to occlude properly, and applied to teeth so removed from the range of vision as to eliminate any objections from an esthetic viewpoint, and we find a limited number of types, with an almost unlimited range of application.

Having also one general type of dummy for bridge work which will be equally practical, esthetic and applicable, in the construction of dental bridges, then, we will need but to consider what shall be the type of attachment to the supporting teeth, and I am of the opinion that three general types will ultimately answer our purposes in a very large majority of cases.

The replaceable porcelain crown with cast base for anterior roots where the substitution of the entire crown is indicated; the gold telescope crown for posterior roots, where such is demanded, and the inlay where all or even a sufficient portion of the crown of the natural tooth remains, and these attachments are equally applicable to "removable" as well as to "fixed" structures.

Thus may the construction of crown and bridge work be revolutionized, and, therefore, since we have these splendid possibilities ahead of us, must its practice become less empirical and more systematic, practical, esthetic and successful.

RELATION OF BACTERIOLOGY TO THE PRACTICE OF DENTISTRY.

BY A. A. STEWART, TORONTO.

Read before the Odontological Club Toronto, Nov., 1907.

In taking up this subject of sterilization to-night I scarcely knew where to begin or where to leave off, so that if you regard this paper as rather wandering you will pardon me. I will begin by giving a synopsis of bacteriology in general, most of which no doubt is ancient history to you. Any work that I have done myself has been along old and well-defined lines, as I am not enough of a bacteriologist to have done any original work as yet.

Bacteriology, when taken in its broadest sense, is a department of biology. Biology includes the study of all forms of life, or it has to do with the origin, development, structure, functions and distribution of animals and plants. We may eliminate all forms of animal life, the higher forms of plant life, and most of the forms of the lower orders, for it is in the lowest order of plants that we find those pathogenic forms of bacteria which are of interest to us. We owe our earliest knowledge of these pathogenic bacteria to Schwann, who, in 1838, published the first accurate study of the yeast fungus, showing that the fermentation was caused by the presence of the yeast fungus, and not wholly by chemical action, as it had been previously thought. He was vigorously opposed by chemists of the age, and by Liebig in particular, who held to the chemical theory of fermentation. Here the matter rested for a time until Pasteur took it up. He came to the same conclusions as Schwann. He entered into controversy concerning the matter with Liebig, and was able to substantiate his claims. These debates drew the attention of the scientific world, and in following these Mr. Lister, then of Glasgow, Scotland, conceived the idea that these microbic growths might be the cause of the so-called surgical

fever. He argued that if they had the power to change the chemical qualities of fluids why might they not grow in the secretions of wounds in such a way to prevent or hinder healing.

Mr. Lister began his experiments along that line in 1859. Antiseptics were known in those days, although they were used empirically. He set to work by excluding all organisms from wounds. He sterilized his hands and instruments, the skin of the patient and the air of the room. To his surprise and gratification the results were highly satisfactory. Wounds healed more rapidly, and practically without any pus formation. These results startled the medical world, and since that time the study of bacteriology has passed from the hands of laboratory men and chemists into the hands of the medical profession.

All micro-organisms are not disease producing. They are divided into two great classes, pathogenic and non-pathogenic. In the mouth we find many non-pathogenic bacteria. Why they are there we do not know. Apparently they produce no inflammatory processes of any kind. For all we know they may be beneficial.

There is another division of bacteria which is of interest to us, and that has reference to their location in growing. They are the parasites which grow in living animals, and the saprophytes which grow on dead animal tissue. Then there are two other classes, the facultative parasites and the facultative saprophytes. As their name implies, the facultative parasites are saprophytes by nature, which will grow as parasites, and facultative saprophytes are parasites, which will grow as saprophytes. It is to the strict parasites and facultative saprophytes that the pathogenic bacteria belong generally, although there are exceptions to this, but the exceptions can scarcely be called pathogenic bacteria.

They are also divided again in their ability to live with and without oxygen. Erobic are those which live with oxygen, anerobic without, and facultative erobic with either. These last are by far the most numerous, and it is to this class that the greater number of the pathogenic organisms belong.

A moderately high temperature is necessary to the growth of micro-organisms. Some are destroyed by low temperature, as the organism of yellow fever, but very many of them are not injured by freezing, and may be frozen up all winter, and will thaw out again in the spring, and will grow as if nothing had happened. Those organisms that are reproduced by spores are not injured by cold, even though the organism itself may be destroyed. Very high temperature will destroy the growing organism; 160 deg. C. will usually destroy all vegetation. Moisture is necessary to growth, and many cease to grow when dried, and that of typhoid fever is apparently destroyed by drying. Others may be dried up for years, and on moisture being

again supplied will grow again. The vaccine virus is an example of this.

The physiological processes of the micro-organism are analogous to those of the higher life, and we have the four distinct steps as follows:

1. The power of digestion.
2. The power of assimilation.
3. The power of formation of waste products and their excretion.
4. The power of reproduction in a definite line.

It is the power of digestion and of the formation of waste products that we owe their power to produce disease. It is not the presence of the micro-organism in the body which causes the disease, but it is caused in some cases by the digestive ferments or enzymes which are thrown out, and in others by their waste products. There are four kinds of microbic poisons:

1. Enzymes, or digestive ferments.
2. Ptoamines and alkaloidal poisons, formed in dead animal matter. Leucomaines and alkaloidal poisons, formed in living animal matter.
3. Toxins.
4. Tox-albumens, formed after the organism has died. They are albuminoid poisons.

If we take, as an example, a simple wound, we have, if there is no infection present, the usual processes of inflammation which tend to healing by first intention. If we infect this simple wound we find this difference. The bacteria will develop in the exudate, for it makes a splendid media, and these in their growth throw out their enzymes, which digest and dissolve the exudate, and destroys the leucocytes, and we have pus formation. Allowing this to go on, the bacteria will continue reproducing, and their waste products, and after death their tox-albumens, will be absorbed by the patient, producing septicemia.

It is this state of affairs which it is necessary for us to guard against.

There is another phase of this subject to which pathologists of to-day are devoting a great deal of attention, and that is immunity from disease and susceptibility to disease. Such rapid strides have been made in the past few years that it may be but a short time until the practice of medicine may be revolutionized, and we will be practising prophylactic dentistry.

There are different degrees of susceptibility and immunity. One may be exposed to a disease and not become infected, but under more favorable circumstances will contract the disease. This person is not very susceptible. Another will contract the disease under the slightest favorable circumstances, while others are entirely immune. Many animals are immune to the diseases of men, and it therefore limits the work in pathological research

to those animals which are susceptible. This latter is called natural immunity. A man has smallpox, and is afterwards immune. A child has measles, recovers, and is afterwards immune. The question is, why? The work of answering this question is largely the work of chemists associated with bacteriologists. Chemists have been examining the blood of susceptible and immune persons to find the conditions existing which bring about this immunity. They find two classes of substances in the blood which prevent this poisoning. They are called defensive proteids. This term was first applied, but has been divided into two groups, alexines and antitoxines. Alexines are antiseptic in their action. The amount determines the degree of susceptibility or immunity. Antitoxines are the direct antidotes of this particular bacterial poison. This is used in the treatment of diphtheria. These antitoxines are developed in the blood by reason of the contact with the particular poison which it antidotes.

Immunity from one disease does not immunize us from others.

If we take the conditions which are prevalent in the oral cavity, and apply part of the foregoing, we may get the explanation of some of the facts which appear in everyday practice.

The mouth, as you all know, serves as a culture ground for the many varieties of bacteria found there. One would imagine that should the mucous membrane be broken and the tissues injured we would have a case of severe infection, owing to the number of bacteria present. But how often is that the case? Not very frequently. The bacteria present in the mouth are constantly there, and the patient has been continually absorbing their poisons, and consequently the alexines or antitoxines have been developed, which prevents any serious results.

In the other hand, if the wound is made by an instrument infected from the mouth of another patient we have presented to us a different aspect of affairs. The wound is infected by bacteria to which the patient is not immune, and we have an infection in the tissues which may become serious or not, depending on the nature of the infection, and the resistance of the patient. It is our duty then to render our instruments, hands, etc., as nearly as possible aseptic after treating each patient.

In going into the subject of sterilization and disinfection I will briefly describe the conditions and methods in laboratory work. Bacteria, as we know, are the most widely distributed of living things. They are found in the air, dust, water, etc., and as most of our laboratory work consists in obtaining pure cultures, we must begin by sterilizing everything, and knowing that we have no infection to begin with. Otherwise our work is in vain. Although the bacteria in the air are for the most part simple saprophytes, and not disease producers in the ordinary way, yet if allowed to mingle with our media we will

have most profuse growths, and when we make our inoculations it will simply be a case of the seed falling among thorns.

Heat in some form is generally used, and of such temperature that the articles sterilized are not injured while the organisms themselves are killed. There is a great difference in the resisting power of bacteria, as we have already noted, and this has a large practical bearing upon the question of sterilization. A temperature which will destroy organisms ordinarily will not destroy those organisms which develop spores.

Heat is applied in two forms, dry and moist. A higher temperature is required by dry heat than by moist heat. The various pieces of apparatus used in bacteriological work, such as flasks, test-tubes, Petri dishes and the like, are sterilized by heating to 160 deg. C. for three-quarters of an hour in a hot-air sterilizer.

The flasks are first plugged with cotton wool to prevent the passage of bacteria. The hot air sterilizer simply consists of a copper or sheet iron box with hollow walls and a fire-brick bottom, with a gas burner underneath. In the roof we have the thermometer. If the temperature is allowed to rise until it reaches 170 deg. C. all spores will be destroyed. For the various liquid and solid media this is too high, and would evaporate and char the tube contents. Streaming steam in a steam sterilizer is therefore used. Although the spores of most bacteria resist the application of 100 deg. C. for a considerable time yet the vegetative forms are destroyed at a relatively low temperature. Having this in mind, Tyndall suggested the discontinuous method of sterilization by streaming steam. The operation is carried out by use of a simple steam sterilizer. Steam is passed under a cover which contains the tubes of nutrient media. This is done for about thirty minutes and then is allowed to remain for twenty-four hours, when any spores present will germinate in the media, and are easily destroyed at a subsequent heating. This is done three times. Even this is not sufficient in all cases, as we find to our sorrow in the college laboratory, and it is necessary to a higher temperature which we obtain by use of an autoclave. This autoclave is similar to a large vulcanizer, with the safety valve set at about 115 deg. C. or 120 deg. C., which gives us about 15 lbs. pressure.

Sterilization by filtration is sometimes adopted in the preparation of the soluble products of bacterial activity, such as toxins and enzymes. The material is placed in a specially constructed cylinder of unglazed porcelain. The canals of the porcelain are so minute and tortuous that the fluid alone can pass through, the bacteria being arrested. The filter must be sterilized frequently, which is done by heating to redness, using great caution, or by passing hot alkaline permanganate solution through it.

Coming down now to the question of sterilization in the office, it is one for which we can make no hard and fast rule. The personal equation enters into it largely. Different people have different results with different methods.

If we take first, the skin, the steps are as follows:

1. Mechanical cleansing, use of brush and plenty of green soap.

2. Dip in solution of bichloride of mercury, 1-2000. As it has been shown that bichloride of mercury even 1-1000 for 15 minutes is sometimes defective, this method is not reliable.

For major surgical operations gloves should be used, and the skin sterilized preferably by the method first adopted in the Johns Hopkins hospital.

1. Scrubbing and washing with soap and water.

2. Application of solution of potassium permanganate.

3. Application of solution of oxalic acid.

4. Immersion in solution of bichloride of Hg.

When we come to sterilizing the oral cavity we have a very difficult proposition. Any germicide used in sufficient strength to affect bacteria would injure the mucous membrane very greatly.

After a long series of experiments Dr. Montefusco, of Madrid, has arrived at the conclusion that the best method of disinfecting the mouth consisted in rinsing it and then brushing the teeth with a sterilized water and brush. According to his experiments, aromatic essences have no effect on certain bacteria, such as the bacillus of typhoid and cholera.

I have found, however, that oil of peppermint 1 cc., alcohol 10 cc., and distilled water 100 cc., has a marked antiseptic action.

Another matter that I think receives too little attention by the laity is the condition of their tooth-brushes. I think it is the duty of every practitioner to instruct his patients in regard to it. As it is a universally recognized necessity that instruments should be sterilized, why not the tooth-brush? I have found from experimentation that brushes are infected after using nearly all the dentifrices on the market. I have not yet tried "Hutax."

The reasons for sterilization of brushes are even greater than for sterilizing instruments, as the one can be at least thoroughly mechanically cleaned, while the brush can not. The usual mouth washes on the market are not sufficiently germicidal in their action to sterilize the brush. I may say that I am not able up to the present to give any good formula, as all that I have tried are either obnoxious when used or destroy the quality of the bristle. I use at the present Wampole's formaline, and use a fairly stiff brush.

I scarcely think that it is necessary for me to say anything

about the sterilization of instruments. That is a matter that has been so often and so thoroughly dealt with that I can add nothing to it. I think there is no doubt that the simplest and most efficient is boiling in water with a little sodium carbonate, 1 per cent. As the temper of cutting instruments is destroyed by repeated sterilization in this way, it is preferable to use this method say every morning, and then after each patient immerse in a 20 per cent. solution of formaline for ten minutes.

If there is an instrument more than another to which particular attention should be paid it is the hypodermic syringe. One so often sees syringes being used which are full of bacteria around the packing, and around the joint of the needle. A hypodermic should be such that it can be boiled repeatedly. The packing, if any is used, should be asbestos, but the all metal syringe is preferable.

Attention should also be paid to the solutions which are injected. The solutions of cocaine, which are so often used as local anesthetics, are particularly liable to be infected, as they are made up and allowed to stand for an indefinite period, without very much care being taken as to whether they are sterile or not. It was thought that the trouble that so often followed the injection of an anesthetic solution was due to the decomposition of the alkaloid, but recent experimentation has proven that it is fairly stable, and previous trouble has been due to lack of aseptic precautions. The best method is to make up your solution as you need it. Use what you know to be sterilized water and take precautions that no bacteria reach it after it is made.

Bichloride of Hg. combines more of the qualities of an ideal disinfectant than any other chemical. It is odorless, colorless, does not injure any fabric or material. Under most circumstances it is a reliable disinfectant, and it is inexpensive. On account of its corrosive action upon metals it cannot be used on instruments. Its power as a germicide has been greatly overestimated. Its reputation as a germicide is due in great part to Koch, who thought it almost infallible. Carbolic acid is also a fairly good disinfectant. It is also a mild escharotic and deodorizer. A 5 per cent. solution of it is a much less active germicide than 1-1000 Hgcl₂. To destroy anthrax spores it requires about five days, while Hgcl₂ will do it in twenty-four hours. For ordinary pus producing bacteria an exposure of at least two or three hours in a 5 per cent. solution is necessary to insure their destruction. About its only use in surgical work is for the disinfection of cutting instruments.

Alcohol is regarded as an efficient germicide, and has been extensively used in the disinfection of the skin. It inhibits the action of ordinary bacteria, but is not destructive except upon prolonged contact. Its chief value in skin disinfection is removing the fat.

Potassium Permanganate is an excellent germicide. It acts by oxidation of the organic matter, and can attack bacteria when other watery solutions fail. It is a powerful deodorizer. It leaves a deep brown stain, which is readily removed by the action of a saturated solution of oxalic acid. Its use is almost entirely in the disinfection of the skin. It is admirably adapted for this, as it oxidizes all the organic matter which cannot be reached by scrubbing.

Formaldehyde is one of the new antiseptics. It is a pungent gas obtained by the oxidation of wood alcohol. It is soluble in water. A 40 per cent. solution is sold under the name of formalin. The gas is non-toxic, and is consequently suitable, as I have said before, for instrument sterilization, if borax be added to it to prevent action on plating of instruments; 1-2000 for thirty-five minutes will disinfect instruments, but it seems to me better to use stronger solutions for a shorter time. For the disinfection of instruments in general boiling water leaves nothing to be desired, but the formalin disinfection may be used to advantage for the sterilization of those articles which are injured by boiling. It is especially urged that it should supersede alcohol for this purpose.

Selections

HON. DR. S. W. McINNIS DIED ON MONDAY, NOVEMBER 4--HIS LAST MESSAGE TO CONSTITUENTS AND FRIENDS IN BRANDON.

Without hope of recovery, but calmly and bravely awaiting the end so near at hand, Dr. S. W. McInnis lingered through the day and died in the early evening of Monday, November 4th, at the hospital in Brandon, where he had been for about a week undergoing treatment for appendicitis.

Rarely has man faced certain death with the calm spirit and thoughtfulness for others which marked the hours of Dr. McInnis' life after hope of restoration to health was abandoned and the sick man knew that he had not long to live. Family, friends, and every duty he bore in life were all remembered and cared for in the hour when he faced death, and up to the very last moment his solicitude for those he loved and the city of his pride and care was unremitting.

Nothing more touching than the letter of Dr. McInnis to the people of Brandon could be conceived, breathing, as it does, his love for the city where his home was, and anxious care for the welfare of all classes of people who live there. The last paragraph of the letter urging strongly that a public school be established for the education of the Ruthenians, to the end that these foreigners, in the second generation at least, may be helped towards good citizenship in the land of their adoption.

Nothing could be more pathetic than the dying words of this whole-hearted man and faithful guardian of the many cares and responsibilities entrusted to him by his fellow citizens. Sinking into a stupor induced by the advance of the deadly poison into his blood, toward the heart, he rallied a number of times until, shortly after half-past five, there came a moment when he said: "Good-bye, everybody; I hear a ringing in my ears. I fear something is going to happen." Speaking thus, he folded his hands, turned on his side, and breathing softly for a minute or two, he died, peacefully, and with no failing of the courage and sanity that enabled him to meet death as bravely as man ever did.

FRIENDS RECEIVED.

Throughout the day, Dr. McInnis received all of the many friends who called to see him and, refusing to consider his own case as the one of paramount interest, he talked to them of matters pertaining to their own interest, and gave advice as to what they should do to best promote their own welfare. This characteristic was but a strengthening, perhaps, of Dr. McInnis' life

habit, and it is because of the hearty wholeness and sincerity of the man in his dealings with others that there is such widespread sorrow because of his death.

When the end came, Brandon flags were hung at half mast; bells were tolled, and the people of the city knew that the end which they knew to be inevitable, but which they still dreaded, had come.

Known as widely, perhaps, as any man in Manitoba, Dr. McInnis was especially well known in his home city, where he was a foremost figure in all public matters and as well known among the people as he was to his associates in civic and provincial circles. In suitable recognition of his service to the public, the city council of Brandon met and adopted a resolution of condolence and appreciation, which was unanimously carried by the votes of Aldermen Jeffery, Doran, Clark, Adolph, McKenzie, Middleton, McLeod, Wallace and Evans, the first-named gentleman presenting the resolution and Mr. Doran seconding it.

COUNCIL'S RESOLUTION.

The resolution thus adopted was as follows:

"The council of the city of Brandon in regular session assembled this fourth day of November, 1907, desire to record our sincere and heartfelt regret at the untimely death of our distinguished and respected citizen, the Hon. S. W. McInnis, and to convey to his widow and relatives, in their sad bereavement, our deepest sympathy.

"Through the death of Dr. McInnis the city of Brandon loses a wise and most respected citizen, one who was ever ready to devote his brilliant abilities towards the upbuilding of our city. No more noble and true-hearted gentleman lived amongst us, and his departure will be keenly felt for a long period. And this council, out of respect for our departed friend, does now stand adjourned until Tuesday, November 5, at 8 o'clock p.m., and that a copy of this resolution be read to the bereaved widow."

HONORED IN DEATH.

With the consent of Mrs. McInnis, the body of the late distinguished citizen of Brandon lay in state in the city hall from eleven o'clock in the forenoon of Wednesday until three o'clock in the afternoon of the same day, and service was held in St. Matthew's Church Thursday morning at an early hour, to permit taking the body to Winnipeg, where further services were held, subject to the wishes of Premier Roblin and the associates of Dr. McInnis in the Provincial Government, of which he was a member in the capacity of Provincial Secretary and Minister of Education. Aldermen Clark and Jeffery were appointed by the

city council of Brandon to represent the civic government in the making of arrangements for the funeral services of Dr. McInnis in Brandon, and it was also voted that the council present a floral offering and march in a body in the funeral procession, besides which a number went to Winnipeg to attend the services there.

The Horticultural Society of Western Canada, of which Dr. McInnis was president also sent a floral offering to the funeral of their deceased executive officer, and the luncheon of the Canadian Club of Brandon, fixed upon for November 5th, was postponed on account of the death of so prominent a member as Dr. McInnis.

SKETCH OF DR. MCINNIS' LIFE.

Born in St. John, N.B., on October 8, 1865, Dr. McInnis was a little more than forty-two years of age at the time of his death. Over twenty-six years ago he came to the West, and completed his education at Manitoba College, entering the employ of Mayor James H. Ashdown, where he remained for a short time, and then took up the study of dentistry, which he pursued here and in a dental college in Philadelphia, where he graduated, and took up the practice of his profession in Brandon, attaining such prominence as a dentist that he was elected president of the Manitoba Dental Association and also president of the Canadian Dental Association.

In 1899 he was named and elected as Conservative member of the Provincial Legislature from Brandon, and his political rise has been steady and brilliant since that time. In July, 1903, he was again elected to the Legislature, and again in March of this year, and was acting Speaker of the House since March, 1902. On June 26th of this year the crowning touch was put upon Dr. McInnis' public career when he was inducted into the office of Provincial Secretary and Minister of Education by Sir Daniel H. McMillan, at the Government House in Winnipeg. At that ceremony Premier Roblin, Hon. J. H. Agnew, Hon. D. H. McFadden, Hon. J. H. Howden, and Hon. Robert Rogers were present, and the testimonials of several of these gentlemen to the worth of their late associate are proof, indeed, of the high and worthy character of the man of whom they speak in terms of such high appreciation.

A SPORTSMAN, TOO.

Together with his many activities, Dr. McInnis was a sportsman and had a lively interest in all forms of athletic sports, being president of both the Athletic Club and the Gun Club of Brandon, and was on a hunting trip to Oak Lake when he was attacked by the illness which terminated so sadly. He had also

a hearty interest in horticulture and was president of the Horticultural Society of Brandon, rarely ever missing a meeting of that body.

Thoroughly interested in educational matters, Dr. McInnis lost no opportunity to promote the interests of the public school in every possible way, and to this end he offered a handsome shield to be competed for by the Brandon schools in the keeping of the school grounds, a point of school ethics which officials are rather prone to treat casually, if at all.

Dr. McInnis was married on June 8th, 1898, to Miss Clara A. Beckwith, who survives him.

FROM HIS COLLEAGUES.

THE PREMIER'S TRIBUTE.

"I realize that, in the death of the Hon. Dr. McInnis, I have not only lost a personal friend, a brother minister, a wise and safe counsellor, but the city of Brandon has lost her most prominent and enterprising citizen and the province of Manitoba one of her wisest, most promising and patriotic sons. The death of Dr. McInnis, just when his sphere of usefulness was widening and the country beginning to appreciate and enjoy the benefits of his knowledge and wisdom in public affairs, is to me one of the mysteries of human life. I presume, however, that in the Providence of the Divine Being there is a purpose to serve that we in our finite minds for the moment are unable to discern.

"The private and social life of the doctor won for him not only the respect but the affection of all with whom he came in contact. His proverbial good nature, his wide generosity, coupled with his princely hospitality, made him the idol of his home city, and most popular and influential wherever known.

"The loss that I realize I have sustained in his death, in so far as his public life is concerned, is only equalled by that of his bereaved widow and family, who have my deepest sympathy in this, the hour of their affliction.

"There is nothing more that I care to say, other than that in his death there is impressed upon me to a greater extent than ever the truthfulness of the old familiar saying that: 'In the midst of life we are in death.'"

HON. ROBERT ROGERS.

"It is an event of far-reaching consequence, one that will be felt not only by the Government of which he was a great force, but by the province he served so well and by the city of Brandon which he loved. His able grasp of affairs and his capacity for taking infinite pains, his absorbing attention to the work of his department in the minutest detail, render his loss one of national importance. At the present time I do not care to speak further

regarding one with whom I have been so closely allied and towards whom I have the strongest feelings."

HON. COLIN H. CAMPBELL.

"Dr. McInnis had for so many years been my personal and political friend that it is difficult for me to realize his death. What every one at once saw and recognized in him was his bright, affable, courteous disposition. These qualities won for him friends everywhere. He entered the local Legislature at the same time as I did, and what impressed me most of all in him was his conscientious discharge of and his devotion to his parliamentary duties. He, from the outset, carefully studied every measure submitted, so as to give the House and the people the benefit of his judgment.

"From the time of entering parliament he assiduously labored to master the principles of sound legislation, and he soon became the trained and wise legislator, easily detecting the weak spots in any proposed legislation and knowing how to fully safeguard the public—always trying to see that no injustice was done to any interest involved. He was fair to all. It is particularly sad that just as he had entered upon his useful ministerial career, full of hope and promise, for which by wisdom, experience and parliamentary training he was so well fitted to discharge with credit and honor to himself and benefit to his country, that his life should so abruptly end.

"By his death the province loses a devoted son who was always ready to advance her interests in every legitimate way."

HON. J. H. AGNEW.

"I sorrowfully pay my small tribute to the memory of a good friend and an able and esteemed colleague. I have known the late Dr. McInnis for the past fifteen years, and during the most of that time his name has been a household word in Western Manitoba, and especially so in his home at Brandon. He entered the Legislature at the same time I did, and from the very first he made an impression on the House and soon proved himself to be an able and progressive representative. His career as a member of the Government has been lamentably short, but long enough to confirm him in the respect and affection of his colleagues, to afford him a firm grasp of his various duties, and to amply demonstrate that he was the right man in the right position. The cause of education had in Dr. McInnis a warm supporter and an enthusiastic and fearless champion. His energy and pertinacity in the cause of the sanitarium for tuberculosis has provided him an enduring memorial. In the sad tragedy of yesterday the province, and especially the city of Brandon, is a distinct loser, and with the passing of a life so full of promise there remains a vacant place which it will be difficult to fill."

GLOOM IN GOVERNMENT CIRCLES.

In the parliament buildings this morning the chief topic of conversation was the death of Hon. S. W. McInnis, Provincial Secretary and Minister of Education, and general regret was expressed at his early demise.

The general opinion prevailed that in the death of Dr. McInnis the Government had lost a man whose position would be most difficult to fill.

In Government circles the deepest sympathy was expressed for Mrs. McInnis in her hour of distress.

The different heads of the departments and members of the staffs employed around the building expressed deep sorrow at Dr. McInnis' death, and many expressed regret at the loss of a personal friend. In the parliament buildings there was probably no more popular member than the representative of Brandon city.

The deputy-chiefs and prominent members of the staffs united in paying a personal tribute to Dr. McInnis as a man and a friend.

DR. MCINNIS' LAST MESSAGE.

Brandon, Man., Nov. 4, 1907.

To the good people of Brandon:

"I take this last opportunity, on my death-bed, of addressing a few farewell words to you, and I may say that, as I shall hereafter have no selfish interest to serve, I certainly can be charged with no motives except the best. What little I have done to assist in promoting the best interests of the city commercially and socially has been done with the desire to be useful, and its doing has given me pleasure. I love Brandon, and all its streets and all its people. I would suggest, however, that there are certain improvements which the city should undertake. I have publicly advocated, and now repeat, with reference to the management of hospitals, that the Government should be induced to provide such legislation as will make these general hospitals self-supporting, without being obliged to make application for general charity. Hospitals are now a necessity, and the city of Brandon should have power, as should all hospital corporations, to collect the cost of keeping each patient each day from the municipality from which that patient comes, not an arbitrary sum, but the full amount of the cost. The moneys should be handled through the municipal commissioner's office, and no money should be paid out for general maintenance of hospitals from consolidated revenue.

"The establishment of a Ruthenian school in this city to prepare the young Ruthenians to go back amongst their people with their helpful knowledge, the teaching of the English language to them, and the proper conduct of this school should meet with

your interest and sympathy. This I believe to be an important step, and I do hope the citizens of Brandon will take sufficient interest in the institution when established to give it that publicity and consideration; and its members that attention, they deserve. I would also submit that the city should have more money to devote to parks and works of art. A small amount expended each year, for a town with such a naturally beautiful situation as Brandon should be in time one of the most beautiful cities upon the continent. The waterworks system in the hands of the city is a good thing, but it would be much better if you had your own lighting system and street-car system. That Heaven prosper the fair city of Brandon, and all kind friends in it, is my parting wish.

"STANLEY W. McINNIS."

D. K. Elliot.—"I did not have a close acquaintance with Dr. McInnis, but was much impressed with his personality and with his determination, and with the purpose that animated him as a public man."

Dr. O'Neill.—"The late Dr. McInnis was a great man. It is too bad that men of his mental calibre are so few, that is, men in the higher positions of the province. His ideas about the sanitarium for the consumptives were good, and a blank is left by his departure from this sphere."

Dr. C. H. Walsh.—"I have known Dr. McInnis for several years, and our friendship has been one I could not help appreciating. He was a man of fine judgment and splendid executive ability, and in his death we lose not only the friendship of an extraordinary man, but have also to bear the loss of our profession's foremost man."

Dr. D. H. McCalman.—"I feel that in the taking away of the Provincial Secretary the country at large has sustained a great loss. He had not only the educational interests of the province at heart, but the general interests of the people, as was shown by his interest in the tubercular sanitarium at Ninette."

Mr. McIntyre, Superintendent of Public Schools.—"His death is felt keenly in educational circles. It is a great loss. The Provincial Secretary was a man who had progressive views of education, and it was confidently expected that under his administration of educational affairs there would be a forward movement generally."

Principal McIntyre, of the Normal School.—"I very much regret to hear of the death of Dr. McInnis, both from a personal standpoint and from the point of education. He had in view many

plans for the bettering of the teaching of the province. I regret that he was not able to carry out these plans fully."

Dr. J. S. Gray.—"I did not have the pleasure of a close personal acquaintance with the deceased gentleman, but I would class him as a brilliant man who showed from his work and ideals that he would do much lasting good. He had great force of character and was of independent opinions, and was a man who would do things. We need men who will do things to-day."

F. H. Schofield, of the Collegiate Institute.—"Dr. McInnis was a very genial, pleasant and popular man, and from the start has shown a genuine and lively interest in all educational matters of the province. Before it appeared that his department was but one tacked on, but he gave it an attention that, had he lived, promised much for the education of the province."

Dr. Bush.—"Dr. McInnis and I were students together twenty-five years ago; since then we have fought the same battles and shared the same victories in dental circles. My personal regard for him has been a feeling that has deepened with the years, and now I cannot express the loss his death is to me. I consider it also a severe blow to the profession, not only in Manitoba but in all Canada because of his broad-mindedness and active desire to see justice done on all sides."

Dr. J. J. White.—"I have known Dr. McInnis ever since I came to Winnipeg twenty-five years ago. He was then a bright young student of dentistry. He was a great friend to me, and besides the unlimited personal regret that I feel, I share the loss which our profession suffers in his demise. Only a week ago I was joking with him on the street about provincial affairs. He was then the picture of health, and I can hardly realize that he is gone."

J. B. Mitchell, Public School Inspector.—"Every one in the province interested in educational work who knew how Dr. McInnis realized the importance of placing education within the reach of all, and how his aims and ideals were in this respect, cannot but feel that a great loss has been suffered by the province in his death. Young, ambitious and energetic, there is no doubt that had he lived he would have made the cause so dear to his heart occupy a foremost place in the councils of the local Government and have brought to pass many improvements."

Rev. Father Drummond.—"The news of the death of the Hon. S. W. McInnis is a very great grief to me. For several

years I have admired the growth and development of his remarkably fine talents and character. I met him first at a lecture which I gave in Brandon, when he presided as chairman, and I could not help wondering that a speaker with such a fine voice, so correct delivery and such admirable choice of words should not be better known. Last winter I had occasion to travel with him and had long conversations about various matters, and these revealed him to me not only as a brilliant, but thoroughly genuine man. That he should be cut off in the prime of life and the very heyday of success is to me intensely tragic."

Dr. J. A. MacArthur.—"I met Dr. McInnes this summer for the first time, and in connection with the establishment of a sanitarium for consumptives, and especially with the work at Ninette. But in spite of the comparatively short time of my acquaintance with him, I had formed a very high opinion of his sincerity and earnestness in his endeavor to benefit the sufferers of the province. In my estimation he was upon the threshold of an exceedingly bright and brilliant career and his death has caused me the greatest regret. It is to be hoped the great work in which he was so heartily engaged, and which is left unfinished by his death, will be carried on as vigorously by the Government as it would have been carried on by him if he had been spared. As a man and as a worker for good his loss is a great one, both to the province and to Canada."

T. D. Robinson.—"In reading the account this morning of the noble man, the Hon. Dr. McInnis, stepped over the line into the great unknown, I felt that Brandon and Manitoba had lost a great man; and his last appeal for humanity, when he knew it was his last, deserves a place amongst the gems of history. And I do hope that it will induce all our governments to place hospitals as a just claim on all our resources, for it is a shame for a people who claim to be civilized to allow their homeless sick and unfortunate helpless to go begging for support as we do now. Hon. Dr. McInnis made his own way from the common walks of life to the highest place of honor in the province, and his name was never connected with graft, which is much more than can be said about some who make a much higher profession than he did. Manitoba is much poorer to-day on account of his death."

NEW METHODS OF INVESTIGATION IN REGARD TO THE EFFECTS OF DRUGS, WITH ESPECIAL REFERENCE TO THE INFLUENCE OF QUININE.

Although it cannot be denied that a very large part of our employment of drugs in the treatment of disease is still based upon empiricism, it is nevertheless a fact that during the last thirty years extraordinary advances have been made in our conception of the manner in which drugs produce many of their therapeutic effects. By experiments carried out with various forms of blood-pressure apparatus we have gained fairly accurate information in regard to the physiological action of drugs which are known to possess a considerable influence upon the circulatory system, and much work has been done in regard to the effects of anesthetics, and the influence of various drugs upon the secretion of bile and the action of the kidneys.

With the advances which have been made in pathological and physiological research, particularly in connection with the conditions of the blood, new fields of therapeutic investigation have been opened, and these are now being tilled in such a way as to produce crops the value of which may well be said to be inestimable, although as yet the growth is so immature that the full value cannot be calculated.

Of all the investigations which have done most towards clearing up our knowledge of infectious diseases and the means by which the body antagonizes such attacks, the work which has been done by Ehrlich and many other investigators upon the condition of the blood is without doubt the most valuable, and these researches in turn have been advanced by the studies of Wright and his associates in regard to the influence of opsonins, so that at the present time we have fairly clear conceptions of the several methods by which the organism protects itself against invading micro-organisms.

It having been found that it was possible to increase the ability of the body to protect itself from invasion by infectious germs through the stimulation of the development of antibodies and opsonins and the activity of phagocytes it at once became evident that a wide field of investigation existed in regard to the effects which drugs might produce upon these protective processes of the body, and it became clear that many of our therapeutic procedures which have heretofore been regarded as of great value, although purely empirical, might rest upon a sound scientific basis.

The readers of this journal will remember that we have pointed out in its original and editorial columns at various times that many drugs which heretofore have been supposed to do good by acting as stimulants, in the sense of circulatory and respiratory

stimulants, might prove to be not stimulants in this sense at all, but rather in the sense that they increase the ability of the phagocytes to devour micro-organisms, or the ability of antibodies to combine with the toxins produced by micro-organisms, or the ability of the opsonins to aid the corpuscles in destroying invaders. It was on this basis that a research was published by the writer of this editorial four years ago which seemed to show pretty positively that the administration of alcohol in moderate doses during the course of acute infectious diseases distinctly increased the bacteriolytic power of the serum.

Our attention has been called at this time to two very interesting and valuable contributions upon the action of quinine sulphate in the human blood, one of which is from the Hull Physiological Laboratory of the University of Chicago, by Thomas M. Wilson, published in the *Journal of Physiology* of September 2, 1907, and the other a research of Manwaring and Ruh from the Pathological Laboratory of Indiana University, printed in the *Journal of Experimental Medicine* of September 21, 1907. In the first research, that by Wilson, he studied the action of quinine sulphate on unicellular organisms primarily, and proved, as have many other investigators heretofore, that fairly strong solutions of quinine hydrochloride cause a distinct diminution in the activity of these organisms. It will be remembered that Binz more than thirty years ago showed that quinine distinctly prevented the migration of white blood cells during inflammatory action in a frog's mesentery, and similar results were obtained by the writer of this editorial and were published in a graduation thesis in 1884. In these early experiments it was found that the free diapedesis of leucocytes in an inflamed area was not only checked, but that the white cells which accumulated in large numbers in the capillaries of the affected parts failed to pass through the vessel walls. In Binz's studies the amount of quinine given varied from 0.01 to 0.005 per cent. of the animal's body weight.

It is not necessary for us in this editorial to go deeply into the technique of the experiments which were carried out by Wilson. It suffices to state that he found, in addition to the effects already described by Binz and the writer, that the phagocytic power of the leucocytes was very markedly affected by the drug quinine. If large doses were administered it was inhibited, but if smaller doses were given it was very markedly increased, the increase amounting to as much as 25 per cent. over normal phagocytosis. The quantity of quinine which produced this increase in phagocytosis was equivalent to about 1-2 grain circulating into the blood of a man weighing 170 pounds, or, in other words, that quantity of quinine which would probably be taken into the circulation from a dose of from 2 to 3 grains of

the sulphate. It is a noteworthy fact that when the doses of quinine were very large, the drug was found not only exercising an inhibitory influence upon phagocytosis, but to be absolutely destructive. Wilson is unable from his experiments to state positively whether this increased ability of the phagocytes to destroy invading micro-organisms depends upon the quinine rendering the bacteria very susceptible to the action of leucocytes, or whether its effect is produced by increasing phagocytic activity: in other words, he has not determined whether the quinine increases the opsonic influence, or whether it has a direct action upon the white cells.

In the research of Manwaring and Ruh similar results were obtained, and as the two researches were entirely independent of one another, one can be considered as the strong endorsement of the other. Manwaring and Ruh not only found, as did Wilson, that quinine caused a stimulation in phagocytosis, but furthermore that large doses diminished phagocytosis, and if the dose was very large, arrested it entirely.

These two researches would seem to throw a flood of light upon certain empirical facts which have been known to the profession for many years. It has been held almost universally by active physicians and surgeons that quinine, whiskey and iron afford the best combination that we have for combating septic infection. If, as proved in the research already referred to, alcohol increases the bacteriolytic power of the serum, and if, as seems to be proved by the two researches just published, quinine increases the phagocytic power of the blood, it becomes clear why quinine is so efficient a remedy in moderate quantities for combating septicemia, and, in the same way, that the use of quinine in malarial fever was removed from an empirical to a scientific basis by the discovery that the drug destroys the parasite which causes this disease, we now have shown that the purely empirical use of this drug for other purposes seems to rest upon an equally sure scientific foundation.

In this connection, too, the facts asserted by these investigators in regard to the difference in effect produced by large and small doses are well worthy of thought. We have long been impressed with the idea that the principle that "if a little is good more is better" in the use of quinine is erroneous. Doses of 30 to 60 grains of this drug, which are sometimes administered in the conditions which we have named, are not only capable of producing manifest evidence of general systemic depression, but, as these researches show, are actually destructive to one of the chief activities of the body in protecting itself from disease; whereas small doses which are not sufficient to disorder digestion or to cause severe headache may produce excellent results.

In this connection, of course, the question as to the quantity of quinine which enters the blood is to be considered. Those persons who have studied most thoroughly the influence of quinine upon the malarial parasite seem to be convinced that if absorption is active very much smaller doses are required than those which many practitioners have been in the habit of administering. Thus, Thayer asserts that 15 grains given to a patient with malarial infection who is kept in bed at rest, and whose alimentary canal is active, is quite adequate to produce the necessary therapeutic effect. In many instances the condition of the stomach is such that even if 60 grains is given only a very small dose actually enters the blood. Physicians should recognize the importance of aiding in the actual absorption of the drug, remembering that the mere fact that medicine is in the stomach does not prove that it is active in producing its curative effects.

We trust that investigations such as those which we have just quoted may be continued still further, and that the use of a very large number of remedies, which are now employed as a result of practical experience without scientific endorsement, will be placed upon a firm and intelligent foundation.—*New York Medical Journal*.

A NEW AND ACCURATE METHOD OF MAKING GOLD INLAYS.

BY W. H. TAGGART, D.D.S., CHICAGO, ILL.

Read before the New York Odontological Society at its anniversary meeting, January 15, 1907

For a number of years I have looked forward with the hope that some day I might meet, on their own ground, the men I have learned to know so well—some of you personally, others through your writings, and still others (the larger number) through your discussions of the papers read before your society.

After studying your individual ways of expressing yourselves, I have learned to know most of those who enter into the discussions of your society papers, for each of you puts his individuality into his extemporaneous talks, as he does into his manner of dressing, or walking; and one of my delights in reading our monthly journals is to try to guess whose remarks I am reading, before I look at the name, and by this means you would be surprised to learn how well I know some of you. But the larger number I meet to-night for the first time, and I hope you will not remember some of my ways of expressing myself, for if you do I fear that most of my paper will be old to you. I say "most of my paper" advisedly, for, gentleman, I come to you

to-night with something *new*—something which in my fondest hopes for improved and more practical methods of filling teeth I had not thought to realize.

THE GOLD INLAY HITHERTO.

It never occurred to me that I would be the one to devise those radical changes which I knew must come in order to make any decided progress; for you will have to admit that our chief improvement in the line of gold inlay work in the last ten years has come more from our increased dexterity, due largely to our experience, than from any novelty of methods.

Of course, individually we have improved, and our gold inlay of to-day is much more sightly and mechanically more correct than it was five years ago; we have changed one method for another, and by a gradual growth the making of the present gold inlay was evolved; but the same foundation was being builded upon: a matrix, either gold or platinum, was burnished to the cavity, or to a cast of the cavity, and this was filled with solder or gold scraps; or a swaged articulating surface soldered to this matrix. All this has been the practice, and with very gratifying results; but we have reached the limit of improvement by these methods, and something radical must come or we will cease to improve the gold inlay.

One method I have the pleasure of showing you to-night; if by chance in my enthusiasm I should say too much, and thus spoil my concentration, or if I should say the same thing too often, remember I am imbued with the same idea that runs through that old religious song, "I love to tell the story, because I know 'tis true."

Before I present to you my special method for gold inlay work, I wish to make a few remarks on some of the underlying principles which pertain to all kinds of inlays, gold or porcelain.

UNDERLYING PRINCIPLES IN INLAY WORK.

There is no doubt in my mind that the inlay principle for filling teeth has come to stay; chiefly because it is a better tooth-saver. I have never advocated any method in dentistry solely because it was easier, but if it be better, and incidentally is easier, I am heartily in favor of it, and this seems to be the position the inlay principle takes in my practice. When I say it is a better tooth-saver, I know I am treading on the sacred ground of some who believe, first, last, and always, in the gold foil filling, and who point to a number of records of fifty years of good service for foil filling; but in their eagerness to stand by an old friend they fail to state the thousands of just as perfect fillings as the fifty-year-old ones, that have not lasted three years, not because

they were not mechanically correct, but because of the low-grade tooth-structure on which the filling was built. No two substances such as gold and tooth-material can come in actual contact, consequently there is always a chance for capillary attraction to take place; but in the case of the long-lived filling it makes no difference about capillary attraction because the tooth-structure is good; in the short-lived gold filling, however, the structure is faulty, and along with this is a bad environment, and then capillary attraction takes place and bad results follow. In case an inlay is put in a tooth of faulty structure the capillary condition does not exist, consequently the mechanical cause for leakage is no longer present, and the tooth-structure, in spite of its environment, resists decay. I have had inlays come out, and have also seen some mighty poor ones, but I have never yet seen an inlay fail from recurrent decay.

An inlay is an honest filling; it is either in the tooth, and saving it from decay, or, it is in the appendix.

I will have nothing to say on *cavity preparation*, except this: If a cavity be a suitable one for a gold inlay, no steel tool should be used in its preparation; carborundum stones of suitable sizes and shapes are far preferable. The inlay is put into cavities with beveled margins, and no steel tool can compare with a carborundum in forming these margins. I say suitable carborundum wheels should be used, but they are not on the market, so I pass around for inspection wheels mounted and shaped for this purpose, and also I pass a file such as I use to shape these points; filing them to shape while revolving in the handpiece. As this inlay process can be made practically painless by use of these stones, why use a steel tool? The difference in comfort to the patient between the two is as great as between a pneumatic tire and an old-fashioned farm-wagon wheel.

A year or so ago Dr. Poundstone, of Northwestern University Dental School, read a paper on cements, and by a series of elaborate experiments showed that the cement took up all of the space occupied by the 1-1000 inch platinum used as a matrix, and consequently there was no use in having a matrix thinner than this gauge, as the cement had to occupy the 1-1000 of an inch anyway, whether the matrix was thinner or not. I knew some of my inlays stood away from the margins considerably more than this, and some of them a great deal less, so I immediately combated this idea, and have since incorporated my own explanation in all of my inlay work. It is this:—

The grains of cement pile up on top of each other the same as so much sand does; now, when direct pressure comes on these grains, those which can get out of the way do so, but the others remain one on top of the other, and the harder the pressure the less apt they are to assume a new position.

Take, for example, the method of the molders in a foundry.

They throw up an irregular pile of sand, and on top of this they put a molding-board; do they then put direct pressure on this to embed it? No. They could put their whole weight on it, and it would embed but a little; but they give it a rubbing movement, so as to push one grain of sand off from another, and in this way they get it to seat itself.

Take the bricklayer. Does he put the mortar down, and the brick on top, and put his weight by direct pressure on it? No, he taps it from side to side and end to end, in order to have the grains of sand roll off each other.

Now, apply this principle to inlay setting. Many are in the habit, as soon as the inlay is approximately to place, of putting direct pressure with an instrument or with a wooden wedge, and by so doing placing the cement grains in a condition where they cannot roll one away from the other, but are on top of each other, and will not allow the inlay to be seated, which to my mind is the cause for an excessive cement line between the inlay and the cavity in what would otherwise be a close-fitting inlay. Now, in the gold inlay I would avoid this by using a mallet and a hardwood stick, and go forward and back across the corners, and down the centre and back again, and keep this up for quite a few seconds.

In the case of a smaller approximal porcelain inlay, I would press the inlay approximately to its seat, and then take a piece of linen tape, about a foot long and wider than the inlay, and draw its full length against the inlay; this absolutely wipes all the excess cement away, and seats it as well as direct pressure can do. Now for our principle:—

At this stage take a very narrow tape, viz., one-sixteenth of an inch wide, and use this as you would a polishing strip, going from end to end of the inlay, as you would in polishing a gold inlay; anyone who has not tried this or a similar method will be surprised at the excess cement which squeezes out, because the grains of cement have been allowed to roll away from one another.

The dissolving of the cement line I have never found to be a serious element in the life of the inlay, as the depth to which it dissolves is only equal to the width of the line, consequently it does not leave exposed any vulnerable point, and no leakage can take place under the inlay, as capillary attraction as a force has ceased. But in a good foil filling this same amount of defective margin would be fatal to the life of the filling.

THE NEW METHOD.

What I now present to you as my process for making gold inlays under the title "A New and Accurate Method of Making Gold Inlays" should have had a more comprehensive name. The title should have included bridge work and gold plate work, for

I believe it will be the coming method for making partial gold plates and bridges as well as inlays. The title also should have included some information in regard to the time consumed, for this is one of its greatest points. By this process I can make gold inlays of the most complicated character in from thirty to forty minutes, inlays which have always taken me from three to four hours to make. In fact, there is not an inlay which I show you to-night that has taken more than thirty-five minutes to make. This, of course, does not include the cavity preparation, or cementing to place, which is the same with this inlay as with any other; the thirty-five minutes is the time actually consumed in manufacturing the inlay.

The process is as follows: After the cavity is prepared, a piece of special wax which has been filtered several times through fine filter paper, in order to remove every trace of foreign matter, is warmed and then pressed well into the wet cavity with the fingers, and the patient is allowed to bite into this in any and all directions, as in mastication. This gives an imprint of the opposing cusps in the wax. The wax is now raised out of the cavity just enough to unseat it, and show that it is not sticking to the cavity. At this stage the wax is chilled slightly with ordinary hydrant water, and the excess wax is trimmed away. Always during this shaping process be sure to keep the wax at an easily workable temperature.

In other words, make a wax inlay the exact shape you wish the finished gold one to be. Any artistic effects put on the wax at this stage will save time in the end, because wax is much more easily carved than gold, and by carving with instruments lubricated with perfumed vaseline one can soon become expert in making wax inlays. If the cavity is so situated as not to have an adjoining tooth to help hold the wax in place while carving, the whole mass of wax can be chilled and carefully lifted from the cavity, and then, keeping it thoroughly chilled under the hydrant water, it can be carved, can be carried back to the cavity any number of times, thus being carved out of the mouth, and the final adapting of the margins is quite easy.

We now have a perfect wax inlay made of a material which has no foreign matter in it. Into this wax inlay [illustrating] a sprue wire is set by warming it sufficiently to melt it to the wax. The wax inlay with its sprue attached is now fastened to the lid of the flask, which is also a crucible mold. The inlay is then wholly embedded in an investing material, and when this has hardened the lid is removed from the flask, and the sprue wire comes with it, which now leaves a crucible with a hole leading to the wax inlay. The flask is put over a flame, and slowly heated up, and the wax is absorbed into the investing material, and leaves a mold the exact shape of the wax inlay. You see

there is no separating of the flask to get the pattern out, as is always done in any other kind of molding.

The flask is now put into the molding machine, which has a nitrous oxid blow-pipe flame for melting the gold, and a compressed air attachment for forcing the liquid gold into the mold, under a pressure of from 25 to 40 pounds to the square inch. The nitrous oxid flame is almost a necessity, as it is only by this flame that the gold can be made liquid enough to cast and cool without shrinking.

When the nitrous oxid flame has heated the gold much beyond its melting point, the lever is quickly brought down, the flame is automatically switched away, and the compressed air is automatically thrown in on top of the liquid gold, which, of course, must go into the mold under heavy pressure. Sometimes cracks have developed in the investing material, and the gold was forced into these minute crevices in sheets as thin as tissue paper, showing how liquid the gold may become.

The actual time consumed in forcing the melted metal into the air-tight mold under this heavy pressure is probably but a fraction of a second, but the success of the whole process depends on this speed.

I have kept pace with all former molding processes, and find that by the time the metal is melted and poured into the mold by gravity, it has become chilled enough to be thick, and not in a thin liquid form necessary for fine casting. My process, as I will show you, takes advantage of every fraction of a second of favorable conditions, and by having this heavy pressure on top, with no possible chance for gold or air to escape, the liquid gold is forced in; and by liquid gold I mean gold in a boiling state—a great number of degrees beyond its actual melting point. While it is in this freshly molded condition the pressure is maintained for a few moments, in order to allow the molten gold to thoroughly congeal; either this continued pressure prevents the gold from contracting, or the amount of expansion in the hot mold is equal to it; at any rate, the filling fits.

Some have suggested that being composed of the purer and high-grade metals there is less expansion and contraction than with low-grade metals, which I think is true in a measure, but there must be some other reason, for we all know that the coefficient of expansion and contraction is different in each metal, and yet metals—gold, silver, copper, brass—all fit the cavity perfectly. My theory is this: The molten molecules of metal are forcibly thrown into the mold and held there, and consequently are not allowed to rearrange themselves, as they would do if not under pressure.

This being a purely descriptive paper, it has taken but a few moments to describe the process, and as my ability as a teacher, if I have any, does not consist in writing text, if you will permit

me I will repeat, in my own language and by the use of my hands, this description, so that, as I hope, you can all grasp it. [At this stage Dr. Taggart gave a minute and detailed demonstration of the whole process, carving, flasking, heating, and casting.]

And now, gentlemen, in conclusion I will say that this is no careless man's process; but I do say that I can take the most ordinary workman in this audience, and if he be a man who will obey instruction to the letter and not allow his own ideas to creep in from the start, I can show him in a half-hour how to make gold inlays better in every way than the most skilled workman can do by any other process to date; and if allowed to instruct the already skilled man, he will make such an inlay as he never dreamed could be made. Gentlemen, I thank.—*Dental Cosmos*.

ADDRESS IN SANITATION.

BY EUGENE H. PORTER, NEW YORK STATE.

THE PUBLIC SERVICE.

He succeeds best who serves best. For success is service, and the greatest hero is the greatest helper. The difference that existed between the noblest emperor of the Romans and the meanest royal profligate who ever occupied a throne, is precisely the difference that obtains between great men and little men the world over. The one would advance the world; the other would advance himself. One would serve; the other would be served. The monuments made by printer's ink are but paper shafts that stand but for a moment; but he who writes himself upon the hearts of his fellow-men, has made an epitaph that shall endure for generations.

With every true man his work is first, his fee second—very important, indeed, but still second. But in every walk in life there is a class ill educated, cowardly stupid. And with these just as certainly, the fee is first and the work second, as with the noble, the work is first and the fee second. And this is no small distinction. It is, as Ruskin says, the whole distinction in a man; distinction between life and death *in* man, between heaven and hell *for* man.

"Society," said Burke, in his "Reflections on the Revolution in France," "Society is indeed a contract. It is a partnership in all science; a partnership in all art; a partnership in every virtue and in all perfection. As the ends of such a partnership cannot be obtained in many generations, it becomes a partnership not only between those who are living, but between those who are

living, those who are dead, and those who are to be born." With but slight changes in phraseology this beautiful and impressive statement applies with great exactness to our organization. It is for us with great opportunities for efficient service before us, to bear this partnership into which we have entered, constantly in mind. It lies with us to illustrate the meanness of an education which produces learned shirks or selfish skulkers, or to illumine the perfection of a rounded culture with the radiant light of devotion to humanity. If difficult problems confront us, so much greater becomes the opportunity to solve them. If great obstacles are in the way, the greater glory to remove them. The watchword is service. This it is that crystallizes our belief that enthusiasm and faith are the precursors of great deeds. As Dr. Van Dyke says, it impressively embodies our conception that the greatest success for a man, the only one at command, is to bring to his work a mighty heart. For it is more man that we need. Recent developments and discussion have driven us back upon the old, old truth—that only personality is the solution for the times—that all of the world's needs are embodied in its need for manhood.

About the plain and clear duties before us to perform we should have settled and fixed convictions. A man without convictions is a man of blubber. I do not say beliefs, opinions, views; all these are chaff in comparison. I say convictions so intertwined with his whole intellectual being, so coloring every thought, plan, purpose, labor, that they can no more be separated from them than his own existence can be separated from them. They should be seen and felt as powers wherever he goes; not because he is sounding a trumpet before him proclaiming their presence, announcing their glory, but because they are an inseparable part of his own personal character as the sun's brightness is of the sun's. So shall we labor that what come to us as seed shall go to the next generation as blossom and that which come to us as blossom may go to them as fruit.—*New York Medical Journal*.

Proceedings of Dental Societies

RESOLUTION MOVED AT CANADIAN DENTAL ASSOCIATION.

Moved by Dr. Geo. K. Thomson, seconded by Dr. Lemieux, that this Association heartily endorses the action taken by the Quebec, Ontario and Nova Scotia Dental Societies with regard to the dental education of the public and school children, and would respectfully suggest the appointment by each of the provincial incorporated dental bodies of a Committee on the Dental Education of the Public and School Children, with instructions to secure the following:—

1. An Act requiring the establishment of dental clinics in the public schools, or the periodical examination of the teeth of school children, and providing for the appointment of dentists for the purpose.
2. Revision of school books with regard to hygiene of the mouth and teeth.
3. Distribution of suitable booklets in the public and private schools and large militia camps.
4. Special instructions on this subject in Normal schools.
5. Special paper on subject of Dental Hygiene in examinations of applicants for teachers' licenses.
6. Lectures before Teachers' Associations and school children in public and private schools.

Unanimously carried.



HON. S. W. McINNIS, L.D.S., D.D.S.
Provincial Secretary and Minister of Education, Manitoba

Dominion Dental Journal

EDITOR:

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3 COLLEGE STREET

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VOL. XIX.

TORONTO, NOVEMBER, 1907.

No. 11.

HON. S. W. McINNIS, D.D.S.

Elsewhere in this issue appears an obituary of the late Dr. McInnis, Brandon, Man. The people of Manitoba have freely expressed themselves concerning the great loss they have sustained in the death of Dr. S. W. McInnis, Provincial Secretary and Minister of Education. The Premier, the ministers, the city of Winnipeg, the city of Brandon, the judges, the heads of educational institutions, and the people generally, express regret at his untimely death and the loss his death was to the country. While his death has been a great loss to the people of Manitoba, it is equally a great loss to the dental profession of Canada. Few

of the profession in eastern Canada realize what a loss they have sustained. He had recently attained the administration of the Department of Education in Manitoba, and from the influence such a position gave him he had undertaken the task of completing the unification of the dental educational standards of Canada. In fact, he had only returned from a visit to the British Columbia Dental Association, where he went in company with Dr. H. R. Abbott, London, Ont., to make an appeal to the profession there to join the Dominion Dental Council. Only those who had been intimately associated with him know the broad national and imperial ambitions he had in educational affairs. The members of the Dominion Dental Council know of his abilities as a law maker and an administrator. He was one of the committee who drafted the regulations which stand as a monument to their breadth of view. Besides being largely responsible for the regulations of the Council, he was also largely responsible for the formation of the Council. He was among the first advocates of a Dominion standard in dentistry, and through his influence and wisdom did much to lay the foundations of two organizations which will stand as monuments to their founders, the Dominion Dental Council and the Canadian Dental Association. Dr. McInnes expected to visit Toronto during November to complete the arrangements for the next meeting of the Canadian Dental Association, of which he was President.

THE DOMINION DENTAL JOURNAL particularly mourns his death, because it has lost one of its most valuable contributors and an associate editor, a position he had filled for many years with the late Dr. Beers. Personally the Editor feels deeply the loss of a friend and a valuable counsellor. After years of association he has learned to appreciate the wonderful energy, the clear vision and the honesty of purpose which actuated the late Stanley W. McInnis, D.D.S. If there should be any doubt of the largeness of soul and manliness of spirit of Dr. McInnis, let the reader carefully peruse the acts of the late minister after he knew he must die within a few hours. Note where he asked for a private

interview with the Premier, so that he might lay before him many changes he had anticipated in his departments. Who could fail to be impressed with his dying address to the citizens of Brandon, and his views on hospitals and education? It is only the man with a great heart and a courageous spirit who could give up his his few conscious moments in his last hours to think of others.

BRITISH COLUMBIA DENTAL ASSOCIATION.

At the annual meeting of the British Columbia Dental Association a resolution to enter the Dominion Dental Council was defeated. Dr. H. R. Abbott, London., Ont., President of the Dominion Dental Council, and the late Hon. S. W. McInnis, Brandon, Man., Vice-President of the Council, went all the way to Vancouver to be present at the annual meeting, to explain to the members the objects and workings of the Council. It was a long trip to take a message that fell upon deaf ears, but the cause is a noble one and will succeed as soon as the profession in British Columbia realize the benefits to be derived from a national organization. The members of the Association who were absent and voted by proxy opposed the resolution, while it was believed that a favorable vote might have been given if they had been present. British Columbia bears about the same attitude towards the Council that each of the other provinces bore to each other before they came together and discussed the question of national standards. Each was satisfied that his province had the best standards, and was more or less suspicious that any province which wished to exchange registrations with them was looking for an advantage. The first meeting of the representatives in Montreal was exceedingly interesting, each viewing the others' moves with suspicion, and jealously guarding what he thought to be his own province's high educational and ethical standing. After a few days' meeting all jealousy and suspicion passed away, and each vied with the other in liberality and justice. The province of British Columbia was not represented at any of these meetings, and as a consequence had no strong man to go home and advocate what will in time be the greatest boon to the profession in Canada.

Quebec representatives, while in favor of the Council, were not strong enough to carry their constituents until last autumn. Since then nothing further has been done, but it is expected that steps will soon be taken to complete their desires to enter the Council.

For Sale.

FOR SALE.—Established dental practice, office furniture, fixtures, etc., in manufacturing town of 3,500 in Western Ontario. Splendid location, territory on all sides, good prices. Satisfactory reasons for selling. Address J. D. K., DOMINION DENTAL JOURNAL.

Dominion Dental Journal

VOL. XIX.

TORONTO, DECEMBER, 1907.

No. 12.

Original Communications

CAVITIES FOR GOLD INLAYS.

BY A. E. WEBSTER, M.D., D.D.S., L.D.S., TORONTO.

Read before Toronto Dental Society

With the introduction of inlay methods of filling teeth comes an entirely different method of preparing cavities. The forms of the cavities are the very opposite of those used in gold foil, amalgam and cement. The instruments, the technique, and the order of procedure are all different. Cavities to retain a gold foil filling or an amalgam filling must be larger inside than at their orifices, while cavities for inlays must be larger at their orifices than inside. Thus we are compelled to study cavity formation for inlays from an entirely different standpoint.

Though gold inlays have been inserted by a very few operators for the past thirty years, they have not come into anything like general use. Only a few operators even to-day attempt the filling of teeth with gold inlays. It is only within the past four or five years that any considerable number of dentists attempt their insertion. My opinion is that the chief barrier to their general use has been the need of different methods of cavity formation and the exacting demands of the technique. With the introduction of the Taggart method as demonstrated so frequently in this city during the past two months comes a decided boom of inlay work. Let us not be carried off our feet in this matter because manufacturers have appliances to sell. The machine will not do everything. There is just as much room, and in fact more necessity, for the exercise of good judgment than before. The selection of the cavity for an inlay, and the decision as to whether to use a matrix or not, are at the foundation of the operation.

Gold inlays have a wide range of usefulness. They can be

inserted with less discomfort than foil fillings. No rubber dam, no saliva ejectors, no ligatures or clamps around the teeth, no wedges, no matrices, no long sittings, no malletings, no making of undercuts with burs, no sandpaper in finishing. The operator expends less of his own and his patient's time, and can increase his usefulness by allowing trained assistants to do his laboratory work. The resulting filling is in most cases better. It is more dense. The walls are not fractured in insertion. Contours and contacts are more certain and perfect. Large areas can be covered. Thin edges will not peel off. There is a lining of cement between the filling and the tooth, reducing thermal shocks. The inlay and the amalgam are not to be compared, because while a few amalgam fillings last without mishap for several years, the great majority fail within four or five years.

Gold inlays are indicated in large cavities, particularly in molars and bicuspid and distal surfaces of cuspids, especially the upper left, and in the incisors, where there is frail enamel and heavy occlusion, step anchorage possible or teeth much worn. They are especially indicated in the teeth of young girls and restless patients. They are the only filling possible for the bicuspid of some young girls whose teeth have proximal cavities at fourteen to eighteen. Amalgam is out of the question, gold foil is impossible, cement is ruin, and gutta-percha is forced out by mastication. We have all seen attempts to save such teeth with amalgam. In a few years they are black and must be crowned. Such teeth plastered up with cement ruin the whole articulation, because contacts are never retained, the teeth fall together, and are so narrow mesio-distally at twenty years of age that gold filling is impossible. Inlays are the dentist's sheet-anchor and the patient's comfort on all surfaces of the teeth where partial dentures rub.

Gold inlays are not indicated in small cavities because gold foil can be inserted more easily. Nor is it wise to attempt their insertion in proximate occlusal cavities in bell-crowned teeth nor thick-necked teeth, because so much of the occlusal surface of the tooth would have to be cut away to allow the matrix to draw.

THE OUTLINE FORM.

The outline form, or the location of the margins of the cavity for a gold inlay, must be chosen with the same care and having regard for the same principles of extension for prevention, as in gold foil or amalgam fillings. While it is unwise to leave irregular enamel walls for foil filling, it is much more unwise in gold inlays. If a matrix is used it is difficult to force it into the little inequalities of irregular margins, and if a wax model is made the fine points of the wax which are impressions of the depressions of the enamel walls are liable to be distorted before they are finally cast in gold. Most cavities for gold inlays involve the

occlusal surfaces of the bicuspid and molars, and should be cut out regularly, including all the pits and fissures. The outline of the gingival need not be cut below the gum line, because it is claimed that cement is not so liable to wash out above the gum line as beneath it. The buccal and lingual walls in bicuspid and molars must be either parallel or divergent toward the occlusal. Extensions on proximal surfaces can be made with less difficulty to the operator and less pain to the patient for gold inlays than foil fillings, because the enamel may be extended without cutting into the dentine. A cavity so prepared may be securely filled with an inlay because of the great edge strength of the cast gold and the possibility of burnishing it to the margins while setting. In passing, let me say that it is necessary to use a matrix in cavities which have a very marked bevel as described, because a wax model having such thin edges is almost certain to be distorted in its removal.

THE RESISTANCE FORM.

The resistance form of cavities for gold inlays need not be so large as for foil fillings, but it must not be understood that such cavities may have small irregular seats. Many inlays are called upon to bear a pressure of one to two hundred pounds, and while they may not crush themselves, even if they have a small seat, the dentine upon which they rest may give way. A flat seat surrounded by slightly divergent walls gives the greatest security. Grooves are a menace to the strength of a tooth, and should not be used to bear the pressure of mastication.

THE RETENTIVE FORM.

The retentive form of cavities for gold inlays is largely provided for in the resistance form. First of all, a study of the forces which are liable to dislodge the filling is essential. Cavities can be made most retentive for inlays by having the greatest area possible exposed to the cement which is attached to the inlay. Though it may be necessary to fill into the centre of a proximo-occlusal cavity in a bicuspid for convenience in drawing the matrix or impression, there is no advantage in building a step as for foil fillings. Where at all possible, cavities should be so prepared that the filling would remain in position even without the cement. The dove-tail on the occlusal; a groove or pit across the step; a seat that slopes rootward as it approaches the axial wall; opposite grooves and molars where there is abundance of tissue are means of retention. Cavities have the greatest retentive form whose walls are so slightly divergent toward the orifice that they are almost parallel.

THE CONVENIENCE FORM.

The convenience form of cavities for gold inlays must be well studied out. Generally speaking, the cavity must be of such

form that the matrix will draw; not only draw, but draw in the direction that every closure of the teeth will force the filling when inserted more tightly into the cavity.

INSTRUMENTS.

The essential instruments in preparing cavities for gold inlays are chisels, stones, cone burs and fissure burs; no round burs, no inverted cones or wheel burs, no instrument which in its use will make an undercut. You will notice that the instruments recommended for preparing cavities for inlays are the very opposite to those used for foil or amalgam fillings. A word about stones. There is no one kind of instrument so essential and so well adapted to preparing cavities for gold inlays as the small stones which can be ground to form with a coarse file in the lathe. These stones may be bought by the dozen, and mounted in cement on old burs. They are readily ground to whatever form required. Like the man that once used a certain undertaker's coffins, if you try them you will use no other. Ivory makes a cross-cut cone fissure bur which has no equal for sloping out fissures in occlusal cavities. Arkansas stones are useful to make a smooth enamel wall and bevel the cavo-surface angle.

TECHNIQUE.

For convenience, let me describe the technique of preparing a pair of proximal cavities in the mesio-occlusal of an upper first molar and the distal of an upper second bicuspid. In neither case is the pulp involved, but the cavity is quite deep in the second bicuspid, and the marginal ridge has not yet broken down in the molar. First decide upon the outline form. With a broad hatchet chisel break down the enamel in the bicuspid sufficiently to allow a square-ended cone-shaped stone to enter. With this instrument cut the enamel back buccally and lingually in the bicuspid, and at the same time cut into the centre of the mesial surface of the molar. Carry the stone to the gingival until a good sound seat is reached in both cavities. As the stone enters the molar cavity it may be carried buccally and lingually until the necessary extension is made. A knife-edged stone may be passed between the teeth to make the necessary extension. About now it will be necessary to square the end of the stone, which will make it possible to cut in for the seat of the cavity, and it will be small enough to cut the step in the molar and trim off the enamel at the junction of the occlusal with the proximal walls. A fissure bur will finish out the step in each, making a dove-tail or pit, whichever desired. It may be necessary to cut in the gingivo-bucco-axial angle with a square-ended fissure bur if the cavities are not deep by decay. Stones are less painful and more rapid cutters than burs. You will note that no attempt has been

made to remove the decalcified dentine except what may have been removed with the stones while the outline, resistance, retentive and convenience forms were being obtained. If the cavity happens to be so large inside that an impression would not draw, cement or wax may be filled into the undercuts. As soon as the wax model is made and the inlay cast, the decalcified dentine may then be removed, and in the great majority of cases sufficient retention is thus obtained to retain the filling. If cement or wax have been inserted for convenience of removing the wax model it should all be removed, and the cement which is used to set the inlay be allowed to be one solid homogeneous mass of the one mix.

Inlays made in such proximo-occlusal cavities will permit of a deep cut from the buccal to lingual at the junction of the occlusal with the proximal portion, which will be sufficient for retention, supposing no dove-tail can be obtained. Simple occlusal cavities in molars may be prepared with chisels and cone burs, and, if very large, cone-shaped stones. Leave the decalcified dentine until the wax model is made. A thin wheel stone will cut out fissures in bicuspid and molars much better than burs.

DISCUSSION.

DR. A. C. ABBOTT (Toronto).—I am sure we all hail with delight the beginning of a new era in the filling of teeth with gold, which will increase our usefulness to our patients and render our operations more tolerable.

We are prepared to see some of the older and more conservative men hold up their hands and look askance at the methods involved, and they will tell us they are satisfied with older and more tried methods. Nevertheless it is quite evident that gold inlays have great merits, and if we are to keep abreast of modern methods we must study this question.

As regards selection of cavities, there are many indications which favor the gold inlay. The essayist has mentioned those cases of nervous patients who cannot stand a long sitting; large contour fillings in bicuspid and molars; many cases of children's teeth, etc.

In some cases the force of mastication is so great that an ordinary gold filling would fail. Here we may have recourse to the gold inlay, and we know we have something that will withstand the greatest stress.

Another phase of usefulness for the gold inlay is as an abutment for a bridge. In this way a more æsthetic and artistic effect may be obtained, as we do away with the unsightly gold crown and preserve the natural crown of the tooth.

In this connection I may say that I consider the inlay which is built from the matrix with 22k. solder, as being preferable to

the cast inlay. The latter is not as tenacious, and we find that, as in cast gold bridges, they are not as strong as the soldered bridge.

In cavity preparation we may follow most of the procedure and observe the general principles involved in preparation for ordinary gold fillings. The flat seat, proper extension, following out of fissures, etc.—these should be attended to.

A nice point brought out by the essayist is the fact that in preparing a cavity for gold inlay we need cut only to the depths of the enamel. We seldom need cut into the dentine for retention. This, of course, saves considerable tooth structure.

The use of the "knife-edge" carborundum in preparing the proximal surfaces is a great help, and in fact the use of carborundum points throughout in the formation of the cavity renders the operation less painful to the patient, and more rapid, than is the case when burs are used.

In the preparation of these cavities we must be very cautious, or we will find ourselves drifting into careless methods. Great care must be taken to secure proper formation of cavity walls in order to get good retention. Sometimes we may use a post in the root canal to anchor the filling. This is very desirable in cases where there is not sufficient tooth tissue to secure the necessary anchorage. Take, for example, the incisal angle of a lower incisor with a very close bite. Here we need great density and strong anchorage in order to withstand the stress of mastication, and the gold inlay with a post suits our purpose admirably.

While it has not been the intention of the essayist to go into the whole detail of cavity preparation for gold inlays, yet he has brought out many of the important points, and in a nice, clear way opened up a very broad subject.

Selections

REPORT OF THE CLINIC COMMITTEE.

BY DR. C. N. THOMPSON, CHICAGO, SUPERVISOR, AND DR. O. L. FRAZER,
SPRINGFIELD, ASSISTANT.

Read before the Illinois State Dental Society, May, 1907.

The following named persons, who had accepted appointments for clinics, failed to appear and sent no explanation or apology, either before the meeting or afterward. The supervisor of clinics and the editor of the "Transactions" are of the opinion that such conduct is a very serious omission of the duty required of professional gentlemen; as much so as if it were specifically condemned by the code of ethics.

3. Dr. Harvey E. Harrison, Chicago. Extraction under nitrous oxide anesthesia. 5. Dr. J. S. Bridges, Chicago. Local dentine obtundant. 14. Dr. L. H. Arnold, Chicago. Ailments of electric motors and furnaces. Their treatment and repair. 22. Dr. J. A. Bullard, Chicago. Impressions of the mouth. 28. Dr. B. D. Wikoff, Chicago. Hollow gold inlay. 30. Dr. R. W. Hood, Monmouth. Porcelain crown, using diatropic tooth. 32. Dr. F. M. Richardson, Chicago. Surgical removal of impacted lower third molars. Extended anesthesia under nitrous oxide gas. 46. Dr. Edward Wall, Springfield. Rational method of securing accurate bite. 47. Dr. Lee K. Stewart, Chicago. Continuous gum. Dr. R. M. Pierce, of Rock Island (No. 12), and Dr. W. T. Reeves, of Chicago (No. 36), refused all the patients that were offered them.

WEDNESDAY MORNING.

CHAIR CLINICS.

1. Dr. T. L. Gilmer, Chicago. Surgical clinic. No patient could be found. 2. Dr. F. K. Ream, Chicago. Impacted molars. Nitrous oxide anesthesia. Did not give clinic on account of illness.

4. Dr. H. W. McMillan, Roseville:

Diagnosis of obscure caries; co-operation of the patient. Chair and table clinic. Attention was called to the diagnostic value of tooth color, specially in the proximal surfaces of the teeth, believing that too many await development of more positive evidence of caries, to the detriment of tooth tissue. The use of very fine curved explorers having short right-angled points for proximal surfaces and right-angled points for occlusal pits and fissures. It is better to find cavities one year too soon than one year too late.

6. Dr. E. F. Hazell, Springfield:

Gold filling. Patient, Dr. F. H. Bowers, of Freeport. The cavity involved the mesio-proximal and occlusal surfaces of the inferior left second molar. The filling was started and the first half built with unannealed gold, showing how perfectly and how much more easily it could be adapted to cervical margins and the floor of the cavity than could the cohesive gold in these locations. The remaining portion of the cavity was then filled with annealed gold. The engine mallet and hand pressure were used throughout the operation.

7. Dr. Lester F. Bryant, Chicago:

Prophylaxis.—Used instruments and polishers designed by Dr. D. D. Smith. A successful and instructive clinic.

8. Dr. John M. Evey, Monmouth:

Porcelain inlay, restoring the mesio-incisal angle of a left superior central. The cavity was formed with chisels, cutting away the incisal angle and labial margin parallel to the long axis of the tooth, rounding the labial margin at the cervical of cavity. The lingual of cavity was formed by use of smooth fissure burs in the right angle extending the middle and gingival thirds distally sufficient for retention; 1-1,000 platinum foil was used for matrix, forming it over a stick approximating size and form of cavity, and placed in cavity from the lingual, burnished to place with moist cotton and final burnish over celluloid strip. S. S. White's letter P was used for foundation body, and Brewster's colors C. F. and A. were used as enamel. Inlay was etched with acid and set with Ames' pearl gray inlay cement.

9. Dr. A. H. Peck, Chicago:

Platinum and gold filling. No patient.

10. Dr. J. E. Aigley, Farmington:

Contour quick-setting amalgam filling, demonstrating the use of matrix. Nothing of importance was brought out except the fact that a matrix should always be used in putting in a contour filling of amalgam. The demonstration was not ideal, as there was a large gold crown on the superior first molar, and the cavity was a mesio-occlusal cavity in the superior second molar. The cavity was prepared and lined with cement; it was necessary to remove the dam at this stage to facilitate the adjustment of the matrix, consequently the filling had to be inserted without the dam. The result was apparently good and demonstrated the merits of the matrix.

11. Dr. A. W. Starbuck, Iowa City, Iowa:

Porcelain inlay. The case was a distal cavity in an upper right lateral. The cavity was formed with a smooth, square end, fissure bur in the right-angle. The lingual wall was entirely cut away so the matrix could be removed in that direction without separation. The labial wall was cut away and smoothed with a smooth fissure bur in a straight hand piece. There was a flat

seat under the labial wall. The incisal and gingival walls were made parallel to each other and at right angles to the surface of the tooth. All margins were left sharp and at right angles to the surface. 1-1,000 platinum foil was used for the matrix. This was first formed out of the mouth over an orange wood stick which had first been formed to approximate the shape of the cavity. Matrix was inserted from the lingual and pressed to place with a damp cotton pellet. It was then burnished to place with S. S. White's burnishers, No. 33 and No. 34. The final burnishing was done over a strip of rubber dam. S. S. White's high fusing porcelain, color P, was used for foundation body. Over this Brewster's high fusing porcelain, color C, was used in restoring the dentine. Brewster's, color T, was then used to restore the enamel. The inlay was etched with hydrofluoric acid. It was then cemented to place with Klewe & Co.'s inlay cement No. 8.

TABLE CLINICS.

13. Dr. Gustavus North, Cedar Rapids, Iowa:

Replacing porcelain facings without removing bridge or crown. A quick method. This method for replacing porcelain facings has proven very satisfactory without removing the bridge or causing any discomfort to the patient. Drill holes through the gold backing for the pins of the new facing; countersink the holes on both sides of the backing; cut the pins so they are just a trifle longer than the thickness of the backing; split the pins of the new facing with a thin ribbon saw half the distance of the thickness of the backing. The facing is now ready to fasten in place by using a little medium setting alloy. Place a little alloy around the pin holes on the side of the backing next the facing and then press the facing firmly in place, holding it there until the operation is completed; take a hatchet-shaped instrument and spread the split pins firmly, then burnish alloy in around the pins on the surface. After the alloy has sufficiently hardened, grind the lingual surface down to the original form, and we have a very slightly and durable piece of work. Alloy has been used for repairing bridges and crowns for many years, but generally in a bungling, unskilled manner. By the above method, repairing can be made as neat and strong as new work.

15. Dr. J. K. Conroy, Belleville:

Advantages of extension for prevention over non-extension. Clinic was made up of impressions and casts taken from mouths in which fillings had been placed from two to five years, showing recurrence of decay where enamel margins had not been cut to allow self cleansing of filling. Clinic also showed several large plaster teeth with cavities prepared along lines laid down by Black method of cavity preparation.

16. Dr. G. Walter Dittmar, Chicago:

Presented a number of models of natural teeth, tooth dissections,

carvings, measurements, drawings and gold shell crowns. He showed in particular the contour that a properly shaped artificial crown should have; *i.e.*, the buccal and lingual convexity and slight gingival constriction which will protect the free margin of gum, and, in normal cases, prevent its recession. Also showed the anatomical markings of the different teeth and how beautifully they can be reproduced in making gold shell crowns by the seamless method. Also demonstrated in detail the technique of the seamless method, swaging from within out.

17. Dr. W. B. Young, Jacksonville:

Method of swaging an open-faced crown. Made the clinic but sent no report.

18. Dr. Louis Ladewich, Chicago:

Porcelain jacket crown. This clinic was intended to show, first, root preparation; second, burnishing of the platinum matrix which was accomplished entirely by digital manipulation; third, the laying on of the porcelain, using pressure instead of jarring; fourth, completing the operation with one bake, using extra high fusing porcelain in pyrometer furnace. Gave clinic both days.

19. Dr. Edward T. Evans, Decatur:

Bridge work. Demonstrated the following: First. Use of banded loose pin porcelain crown for anterior abutment, showing method of grinding and swaging gold caps to extend from coping down distal surface to give greater surface for attaching intermediates. Second. Method of making accurate die and counter-die for swaging cusps for shell crown, after carving same in modelling compound, by making impressions of cusps in plaster of paris and pouring Ransom & Randolph Co.'s "Fus-alloy" into this impression; making counter-die of same, preventing sticking by smoking face of die with ignited pitch-pine stick. Third. Method of carving cusps of porcelain faced intermediates in modelling compound and swaging all together, using same method as for swaging crown cusps, assembled facings and cusps by placing modelling compound cusps with facings attached in swaged piece of gold to invest and solder.

20. Dr. W. S. Wallace, Sparta:

Gold inlay for fractured incisor. This method may be used where the incisal edge is broken off, or where the lingual surface has been cut away by opposing teeth. First grind incisal edge and lingual surface to allow for plenty of gold for occlusal wear. Next cut two dove-tail cavities in the incisal edge; the same appearing on lingual surface as V-shaped openings. Next drill a pit in the lingual fossa. After the retaining points have been properly prepared, the inlay will have to go on from the end, and no amount of stress will unseat it. Now take pure gold, forty gauge, and burnish over the lingual and incisal edge; take a gold plugger and punch holes through the backing into the pit

and dove-tail cavities, and pack gold foil into these; this will give you gold foil pins instead of soldered platinum and a much better adaptation. After packing the gold foil you can complete your adaptation of the backing to the tooth without any danger of it moving. After thoroughly burnishing, remove backing, coat under side with whiting to keep solder from flowing through. Cut strips of twenty-two karat solder the size of incisal edge and sweat them on the backing, one at a time, until the cusp is the proper length. Place eighteen or twenty karat solder on lingual surface and flow until you get the proper occlusion. Place backing on the tooth occasionally during the soldering and burnish so that your backing may be in perfect adaptation to your tooth, finish and set. Where the fracture is so extensive as to destroy the pulp, I use a step anchorage with iridio-platinum pins in root canal. The method may be used as an abutment for bridge.

23. Dr. T. W. Pritchett, Whitehall:

Use of cement in starting gold foil fillings. The purpose of the clinic is to demonstrate the application of cement under metal fillings as advocated by Dr. C. C. Corbett, of Edwardsville, who was probably the first one to clinically exhibit it to the Illinois State Dental Society. The salient features advocated are, the option of using it in small or relatively large quantities in accordance with the requirements of the case; soft and sticky in some cases, and in others it may be allowed to harden; it may be used soft as an aid in controlling the gold in fillings of any size; it may be so used as to practically make an inlay of the major part of the filling in many cases; it may especially be used in proximity to the pulp, independent or in combination with the other walls of the cavity. In a word, its use will grow upon one if painstakingly used in the beginning.

24. Dr. C. P. Pruyn, Chicago:

Study of amalgam. Filling glass tubes to show how difficult it is to make perfect fillings. Clinic consisted in having any one who wished endeavor to absolutely condense amalgam in a short glass tube having a sealed bottom; the sides of the tube being covered until after the filling was inserted, when it was removed and the filling examined through a magnifying glass through the glass sides of the tube to determine as to the density of the filling. Many tried it more or less successfully. It is the opinion of the Clinic Committee that all who tried it returned home with a more definite idea as to what was necessary to make a perfect filling than they had before the clinic.

25. Dr. C. B. Sawyer, Jacksonville:

Demonstration of the use of spence metal. Demonstration consisted in making dies and counter-dies and swaging, showing fineness of detail and the advantages of its low fusibility.

26. Dr. H. N. Orr, Chicago:

A method of obtaining an accurate model in Melotte's metal. Impression is taken of cavity in base-plate gutta-percha, which is invested in plaster. When set, all over-hang is cut away to allow of ready separation. When impression is invested, it is carbonized over gum camphor, a mouth blow-pipe may be used to blow the carbon into the fine points and deep parts of the impression. A rubber ring is then placed over it, and Melotte's metal is poured in quite hot and gently jarred down. Upon separation it will be found that the carbon has produced a surface over which the Melotte's metal has run to all the fine parts of the impression.

27. Dr. B. Newsome, Minonk:

Some methods useful to me. This clinic consisted of methods of adjusting the parts of a broken vulcanite plate, of plaster models and dislodged abutments in bridge work to their proper places and retaining them there. Place some hard, sticky wax on each part or piece a short distance from the fractured edge; adjust the parts to their proper positions, warm a piece of strong wire and place the same from wax on one fragment to wax on adjoining fragment, and hold till cool. In this way no wax gets between the parts as it does when the wax is placed over the fracture. Teeth for bridge work can be easily placed to position, after they are ground to fit, by waxing the wire to lingual of the abutments and waxing the teeth to the wire.

29. Dr. W. O. Fellman, Chicago:

Lingual concealed abutment attachments for anterior bridges. Preparation of incisors and cuspids is as follows: Mesial and distal surfaces are disced off flat and lingual is ground enough to get space for sufficient thickness of the attachment. Then a groove is cut with a fissure bur on mesial and distal surfaces in long axis of tooth. These two grooves are connected near incisal edge with a transverse groove. An impression is then taken with gutta-percha. The tooth must be prepared so the impression will draw from the tooth perfectly; make a model with Melotte's metal and burnish matrix and stiffen with twenty-two gauge iridio-platinum wire tacked with twenty-two karat solder.

Bicuspid differ only in the fact that the lingual cusp is cut off and replaced in the inlay attachment. Molars are prepared by discing the mesial surface from below gum line, sloping toward the occlusal; mesio-lingual and mesio-buccal cusps are cut off and groove cut, bucco-occluso-lingually, with a knife-edged stone. The bulge on buccal and lingual to the groove is ground off so impression will pull off and matrix will fit perfectly. Matrix is stiffened with the wire and cusps are restored with Keeton-Williams gold and solder. This makes a strong inlay abutment with margins of inlay in immune areas.

FRIDAY.

CHAIR CLINICS.

33. Dr. W. H. De Ford, Des Moines, Iowa.

A lesson in administering somnoform. Gave a very instructive talk on the advantages and use of somnoform in dental operations. In speaking of the preparation of the patient, he insisted that the clothing should be loose, and in the case of women the corset must be removed. This insures a quick and a more agreeable anesthesia and decreases nausea. He described the method he employed in administering somnoform to the young, the aged, the anemic, the plethoric, the alcoholic. Several dentists present voluntarily took the anesthetic to study the effect and action of somnoform personally. The doctor recommended this anesthetic for all operations on the teeth, such as preparation of cavities, removing pulps, etc., showing practically at what stage of the anesthesia these operations could be performed.

34. Dr. G. H. Kopperl, Jacksonville:

Porcelain inlay. Buccal cavity in inferior left second molar. Cavity formation consisted in preparing the side walls at right angles to the surface of the tooth that the outline of the cavity intersected, leaving sharp margins. Platinum foil 1-1,000 inch thick was used and burnished with ball burnishers; swaged to cavity with camphor gum. High fusing porcelain was used, foundation for the base, and lower fusing for the enamel.

35. Dr. Edmund Noyes, Chicago:

Gold foil filling. The cavity was a disto-occlusal in a right lower second bicuspid with insufficient space, which greatly prolonged the time of the operation and made it necessary to build gold as close as possible to the molar, and after finishing the rest of the filling as nearly as practicable, it was left to be wedged for finishing the contact point subsequently. Before the operation was finished, the patient, Dr. W. A. Johnston, of Peoria, was elected president, and the moment the rubber dam could be removed, he was hurried into the session of the society to be inaugurated, without waiting for coat, collar or necktie.

37. Dr. E. H. Hickman, Arcola:

Contour amalgam filling, using matrix. Made the clinic, but sent no report.

38. Dr. Austin F. James, Chicago:

Treatment of pyorrhea alveolaris and prophylaxis. The points of the clinic were the demonstration of the planing principle in instruments, using the tooth as a fulcrum gauging the depth of your cut and acting as a guide for the instrument in removing deposits in pyorrhea, and smoothing the gingival margins of enamel in prophylaxis. Also that the planing principle or the use of an instrument which touches or bears on the tooth

posterior to the cutting edge greatly lessens the pain in the removal of deposits on sensitive teeth. The clinician also advocated the use of 20 per cent. argyrol in pus pockets after having removed deposits and washed out pockets with warm carbolized water. Use argyrol freely, flushing the pockets thoroughly.

39. Dr. Fred. W. Parker, Chicago:

Solid gold inlay without investment, showing patient and model. The cavity to be filled was a very large bucco-occlusal one in a lower left third molar. The pulp had been extirpated and the pulp chamber was filled with cement.

An impression of the cavity was made with modelling compound in the usual manner, and an amalgam model made from the impression served for the purpose of making the matrix, thirty-six gauge, twenty-four karat gold being used. The matrix was then placed in the cavity, carefully burnished to place, and gold cylinders were packed firmly into the matrix in the cavity until the cavity was about half filled, when the matrix was removed and twenty-two karat solder was melted over the foil by holding the matrix in a Bunsen flame. The matrix was then replaced in the cavity, burnished again, and a bite impression taken with modelling compound. The impression was run up with plaster, with the matrix in place in the impression, and placed on an articulating frame and separated. A piece of modelling compound was softened in the flame and pressed into the matrix, and the articulating frame was closed. When the compound had cooled, it was carved to the proper contour and occlusion. The plaster tooth containing the matrix was cut from the rest of the model and placed in plaster in a ring of a swaging device so placed that a cover, so to speak, could be swaged for the matrix. When the plaster in the ring had hardened, a piece of twenty-four karat, thirty-six gauge gold was placed over the modelling compound and swaged very thoroughly to place, after which it was trimmed. At this stage the gingival two-fifths of the buccal side of this swaged cover was cut away that an opening might be secured through which the subsequent soldering could be done. After swaging again the plaster and compound were cleaned from the matrix, the matrix placed in the tooth in the mouth and the cover put to place, and the patient was instructed to bite down to ascertain whether or not the correct relations existed. Then the matrix and cover were held firmly in their correct relation and soldered in the Bunsen flame without any investment, the pieces of solder necessary being introduced at the opening made by cutting away the gingival portion of the buccal wall of the cover, as mentioned above. The soldering was continued until the interior was full flush with the opening. Flux was used on those surfaces on which the solder was to flow, and anti-flux on the other surfaces. After the soldering was completed, the inlay was finished and polished with stones and discs and cemented to place.

This operation was, I believe, the very best thing for the case, because of the difficulty of access and the extensive destruction of tooth structure. To have made a filling of gold foil would have been a physical impossibility. To have placed a matrix for an amalgam would have been extremely difficult on account of the close proximity of the cheek, and because the gingival margin of the cavity lay just at the line of attachment of the tooth and peridental membrane. A crown was avoided, and a very desirable and permanent repair was made.

40. Dr. Donald M. Gallie, Chicago:

Gold filling. Mesio-occlusal cavity in right inferior first molar. Margins and walls were extended so as to give convenience and retentive form to cavity. Filling started with soft gold, finished with cohesive cylinders and heavy foil. When finished there was perfect restoration of interproximal space, mesio-distal diameter of tooth and contact.

42. Dr. Louis E. Bake, Chicago:

Porcelain inlay. Distal cavity in lateral incisor fitted with high fusing porcelain, and models showing cavity formation and method of laying on colors.

TABLE CLINICS.

43. Dr. W. H. Taggart, Chicago:

Cast gold inlay. The most interesting of the clinics. Dr. Taggart also illustrated his methods at one of the sessions of the society, but he has not written out any report.

44. Dr. M. R. Harned, Rockford:

Sure method of securing accurate fit of cope for porcelain shell crown. Having prepared tooth with shoulder slightly beneath gum margin, fit loosely a band at neck of tooth gingivally from shoulder; cut platinum foil 1-1,000, length of band and sufficiently wide to be sure to lap well over top of tooth and extend under gum; roll up and slip within band and turn the edge over edge of band to go under gum; slip on to tooth. This will hold margin of platinum safely above shoulder; crimp platinum in to tooth and slip small rubber ring (cut from tubing) between band and platinum, shove firmly down to shoulder; burnish platinum over end of tooth, remove rubber ring and band, and burnish any particular places you desire to touch up.

48. Dr. C. B. Powell, Jacksonville:

Porcelain jacket crown. Demonstrating porcelain jacket crown, showing that it is not necessary to extend preparation to the gingival margin on the lingual surface of the tooth. The advantage of which is that the pulp-canal could be opened for treatment, if necessary, without jeopardizing the crown.

49. Dr. C. M. Baldwin, Chicago:

Aschers' enamel cements. This clinic demonstrated Aschers' artificial enamel, also the clinician's set of instruments for work-

ing the same and how to make them. Cavities should be generally retentive in form and margins square, as a rule. To secure good results, it is very necessary to have a proper mix, which should be applied to walls and margins while the mass is thoroughly adhesive. A gelatine matrix cut from a medicine capsule is used when filling most compound proximal cavities, reinforced with tightly packed cotton in the gingival space, and with modelling compound if a buccal or lingual wall is also to be restored.

51. Dr. Dean R. Phillips, Chicago:

Anterior bridge, concealed attachments, two-tooth effect in three-quarter space. The bridge shown was the upper left first and second bicuspid. First molar having moved mesially, space for one and one-half teeth remained. The attachments were a Carmichael on the cuspid, and large, well-seated inlay in first molar, between which was constructed an ingenious saddle to hold a block section; the block section was ground to restore lost gum tissue and by shortening entirely from the distal, gave the appearance of two full teeth. The gold work of the bridge was first cemented to the teeth, after which the block was cemented into the carefully prepared portion on the saddle. The distal half of the second bicuspid being ordinarily hid from the line of vision, makes it the logical part to take away when space is too small.

52. Dr. F. W. Gethro, Chicago:

Cavity formations for gold fillings. Clinic was given but cannot be well described without illustration, so no report is made.

54. Dr. F. B. Noyes, Chicago:

Correct cavities for gold inlays, natural teeth. Clinic was given, but cannot be well described without illustrations, so no report is made.

55. Dr. F. E. Roach, Chicago:

Pontoon bridgework. In supplying partial dentures with the pontoon bridgework, the minimum destruction of the remaining teeth is incurred in construction, and the injuries to their lingual surfaces and the adjacent gum tissue caused by the impingement of plates is eliminated. Especial attention was given to supplying the lower molars and bicuspid by means of a round wire connecting the saddle on each side.

57. Dr. Geo. W. Haskins, Chicago:

Removable dentures, using tube and split pins. Seemed to interest the few rather than all, but those who were interested were so from a feeling of the need of something better than the clasp attachment on partial and full lower dentures without anything to keep them in place but gravity. The clinician emphasized the point that in either full or partial cases, the denture was not retained in place by the roots, but by the slight friction of

the teeth and pin on the telescoping bands, holding the plate on the ridge, thus preventing movement laterally.

58. Dr. F. H. Skinner, Chicago:

Gold inlay. Assuming that cavity is prepared, an impression is taken in modelling compound, using dry heat to soften same, so that just the end of modelling compound cone is soft, the centre of cone forming a hard core, which forces the softened point into every detail of cavity. Chill with cold water and remove. In approximal cavities a matrix of about thirty-gauge German silver is used, cut in width to extend from the gingival to the occlusal surface of the tooth. Articulating and contouring bites are then taken and poured up in plaster. Impression is invested in plaster so that just the cavity portion shows, and all parts which would be liable to prevent getting a good model are cut away, surface dusted over with talcum powder, and cement mixed to putty consistency forced into impression. This requires the help of an assistant. When set, separate, and a perfect reproduction of cavity in cement is the result; this is set in a Brewster inlay swaging cup with plaster. When hard the matrix is swaged, using the Brewster inlay swager; matrix is made of platinum, 1-1,000, or pure gold, thirty-six to forty gauge. I think I have had a little better result using platinum, although I cannot understand why. A piece of warm modelling compound is then forced into the bite, cusps carved as indicated for articulation, and forced into Melotte's moldine, and a metal die run up, and cusps or cover of inlay swaged of twenty-two karat gold, thirty-six gauge, and trimmed to cavity margins. If lines are accurately carried out, this cover will fit over swaged matrix in cement model, leaving the approximal surface open. Wax cover and matrix together, invest, and through approximal opening flow twenty-two karat solder, filling to full contour. Grind approximal surface as indicated by placing in contouring bite previously spoken of. File or disk off overlap as indicated by placing in cement model, and polish. If care is taken, it is very seldom necessary to do any grinding, finishing or polishing after inlay is set, although I usually go over the margins of any metal inlay with burnishers after setting.

60. Dr. J. W. Ritter, Charleston:

Selected. Clinic was given, but no report sent in.

62. Dr. G. H. Henderson, Springfield:

Swaging a plate, using the Olivian plate swage. The feature of this process of swaging metal base for plates is that the die metal fuses below the boiling point of water, and consequently can be poured into a fresh plaster impression, thus saving time and securing an exact reproduction of the mouth in metal. This metal is said not to shrink in cooling. The practice of scraping impression as followed heretofore applies to this method. The process consists of imbedding the base of the die in model-

ling compound in the lower half of a heavy metal box. The upper half being filled with some semi-plastic substance, such as unvulcanized rubber gutta-percha, etc., the plate is roughly approximated to the die, then covered with rubber dam to prevent the counter-die material from sticking; then the two parts of the metal box, the one containing the die with plate, the other containing the plastic material, are strongly clamped together over the plate and exposed to the hydraulic action, so to speak, of the small punch that is forced upon the plastic interior of the box through a three-quarter-inch hole in the top for that purpose, exerting a pressure of several tons. The advantages of this method are that the die is made direct from the impression, thus favoring accuracy and saving time and work. If there are extensive undercuts, the die can be melted from the inside of the plate after it is swaged. It is the experience of the Clinic Committee that this method is a valuable adjunct in making plates from dies to be used to give the final set, but that it is not strong enough to absolutely swage the entire plate.

63. Dr. A. C. Hewitt, Chicago:

Amberoid cement. The powder chosen for the body for cements consists of granules, transformed from mineral oxides to aggregations of carbon-like, diamond-like hardness and insolubility in any menstruum, and absolutely so in oral fluids. These granules are crystalloid, drawn together in regular geometric shapes and held thus as the result of calcination in intense heat (2,800 deg. Fahr. continued for ten consecutive days). No powder of lower calcination is used. To mitigate the toxic influence of phosphoric acid, and to bar oral fluids from the said crystals constituting the "setting-bond," the author of amberoid cement interposes amber, and amberoid resin with the "cement liquid," and by so doing he renders the cement non-toxic and so nearly moisture-proof that oral fluids cannot dissolve the cement.—*Dental Brief*.

A NEED FOR A CHANGE IN THE PRACTICE OF DENTISTRY.

BY B. F. ARRINGTON, D.D.S., GOLDSBORO, N.C.

When we look about us daily in our wanderings and associations in village, town or city, and in social circles in homes, and then more definitely in our offices when approached by those who come to us for relief of diseased teeth, environed by bleeding, suppurating gums, attended with a most repulsive breath (a very common occurrence), we can readily realize that there is great need for a change from the present status of dental prac-

tice to that of a nobler and higher plane of practice, going back to first principles, embracing preventive treatment, that will, commencing with childhood, prevent to a great extent the condition of mouths above mentioned.

The present order of dental practice, to meet the demand created by the defectiveness and loss of teeth, is far in advance of the prevailing practice of forty years ago, and is most creditable as a feature of progress in the prosthetic line of dental practice, and, when faithfully executed, is useful as a substitute, and beautiful in effect as a restorative feature. But to preclude the possibility of need for so much of such work as is now being so beautifully executed, but abusively in some instances, is a subject for consideration, and much thought must be given to it. More care must be practised, and more earnest effort made for the healthful preservation of the natural teeth, and the soft tissues adjacent, especially the gum tissues and the pericemental membrane surrounding the roots of teeth and lining their alveolar sockets, which are chiefly involved in what is known as pyorrhea alveolaris, or Riggs' disease.

Just here a question presents, that must be carefully digested, to determine the possibilities that may develop, favorable or unfavorable for the future of dental practice. Whether the present order of practice shall continue, with all of its radical features, or whether there shall be a change (conservative) that will bring better general results in lessening to a great degree much of the reckless extraction of teeth and the extravagant type of work that is now so radically executed. A halt for reflection and serious thought on the subject, and for consultation to determine the best lines of action for reform practice for future benefit to the human family, is a subject that should be seriously considered in all of its features so that there may be results beneficial alike to the profession and the public.

The question plainly presents, are the natural teeth cared for and preserved for utility as they should be? Not one dentist in fifty of the best informed will answer in the affirmative. Hence we plainly see the importance and necessity of a halt for reflection and for consultation with a view to concert of action for a higher plane of dental practice, such as will bring credit to the profession, and blessings inexpressible to the human family.

During the past fifteen or twenty years, the pendulum in dental practice has swung too far, and must now, for the universal good, come to a poise, that sober second thought may prevail and effect a favorable influence. The craze for, and sanction of, display fillings, involving an extravagant and unjustifiable sacrifice of beautiful, healthy enamel, and the adjusting of gold crowns on exposed teeth, and bridging on defective roots, has been extreme and out of reason, and in many instances has proven seriously hurtful and most objectionable; yet the work

of abuse goes on, with some without abatement, as the result of false teaching or the want of correct teaching in some of our dental colleges, and false practice indulged in many dental offices, and in some instances by dentists of high repute for first-class skill and a high order of professional attainment. Just so long as this state of defective teaching in colleges and questionable practice continues, the evil results will prevail to the detriment of the afflicted public. Professional attainments are often over or underestimated by the public, and credit is given and praise bestowed where not merited.

Healthy enamel should never be sacrificed for the display of gold. This practice, much indulged, is not legitimate or commendable, but is justly censurable as false practice, and a gross injustice to trusting and confiding patrons. Owing to the shameful neglect of mouths, bridges and gold crowns as substitutes are often needed, and when rightly adjusted on a basis of conservative practice, with freedom from defect, both, alike, are useful and a blessing to the possessor, and cannot be too highly appreciated and praised. There is unfortunately much defective and condemnable work on this line, causing much discomfort and bringing much just reproach. It is questionable if one-half the bridges now in use are not objectionable, and that if carefully inspected they would not justly receive the stamp of condemnation. In some cases (many), they gather and hold large quantities of debris that become as cesspools for breeding and development of bacteria to the general detriment of the human system; foul breath being a frequent and most repulsive consequence.

The question is being asked daily, when will this extreme and unjustifiable practice abate, and a more reasonable and better line of practice prevail? Many members of the profession, chiefly the conservative and best thinkers pertaining to old and new methods of practice, and many of the more educated laity, are thinking seriously on the subject, and ere the lapse of a decade, possibly, prominent members of both professions (dental and medical) will, in the interest of humanity, combine in an effort for reform in the treatment of diseases of the dental structure. Blessings not yet dreamed of will come of their united harmonious efforts in a good cause. For the present patch up substitution work, in many cases unwisely advised, will be substituted by a preventive line of treatment, through prophylactic care of mouths, commencing with childhood, that will preclude to a great extent need for the line of work now so much in evidence. The effort to be made on preventive lines of procedure will be with a view to preserving the natural teeth in a comparatively normal state, also the gum tissues and the pericemental membrane. Healthy mouths will be the consequence, with freedom from any excess of germ production and development that could prove hurtful to teeth or gums, or in any way injurious

to the general system. The prevention by prophylactic means of much of tooth decay and pyorrhea will be more scientific and more in accord with the requirements of nature and of reasonable, common-sense practice than the present status of treatment for the arrest of progress, and for cure.

Many gold crowns have been placed on exposed teeth for conspicuous display, and much beautiful, healthy enamel of the front teeth has been recklessly cut or burred away to make space for gold fillings, not so much for preservation of the teeth as for advertising effect. Thousands upon thousands of teeth that could be treated and made useful are extracted daily to be substituted with artificial dentures. A great deal of this is disreputable practice and is a humiliating, shameful feature that should be openly condemned and frowned down. It would be wiser and more just to all concerned to give more thought and study to the subject of prophylactic treatment for the preservation of the normal state as nearly as possible, of the natural teeth and gum tissues.

Dr. H. S. Boon has said: "Such faith have I in the efficacy of preventive means that I do not hesitate to declare that the child is already born who, barring accident or systemic disease, will never know the meaning of dental discomfort." Dr. S. H. Guilford is reported in a leading dental journal as saying: "To-day the chief glory of dentistry lies not in the sacrifice of important organs, but in their conservation, thus adding both to the health and comfort of the human race. Experiment, investigation and tentative practice are exhibiting results in the way of prevention scarcely dreamed of even by our immediate predecessors."

Such expressions from men of note are on a line of advanced thought, and plainly point to the future practice of dentistry, and give encouragement for hope to all interested on the subject. This change is needful, and there is visible every day a demand for it. It can be easily effected if dental colleges will take the matter in hand and will, with concert of action, educate students with a view to the accomplishment of the desired result. To be effective in effort, there must be concert of action; and with concert of action the work needful can be easily accomplished.

When there is a will to do in the interest of a good work there can always be means devised for success. Concert of action wisely controlled is a powerful force, and when exerted in the interest of humane work there can be no question as to result. Dental colleges must, and doubtless will, take the initiative in this much needed prophylactic treatment for prevention of disease, and for the preservation of healthy teeth and gums.

As one of the first lessons to be imparted in dental college instruction, dental students should be definitely instructed regarding prophylactic treatment, and, coupled with such instruction,

they should be informed that pyorrhea alveolaris, or Riggs' disease, is a curable disease, and they should be instructed how to treat the disease on the shortest, safest and most conservative lines for convincing and satisfying results.

Physicians give advice and treatment for the arrest of disease and the betterment of health, and for the preservation of the various organs of the human body in a normal state, and it is the pride and boast of many of the ablest members of the medical profession to-day that they can prevent as well as cure disease. This evinces a spirit and principle most commendable and praiseworthy as a humane feature above commercialism. As with the medical, so it must be with members of the dental profession. Time and earnest investigation by experiment for facts will effect results most convincing and gratifying, and dentistry will be lifted out of the mire, and a better, more scientific and exalted order of practice on a higher plane of conservative, professional usefulness will prevail for the prevention, check and cure of disease.

There is no good reason why the present status of dental practice should prevail and be perpetuated without any effort to lessen the frequency or mitigate the severity of disease. Due regard for suffering humanity requires that the effort shall be made, with a view to the best results attainable. Observation, experience and good judgment dictate that prophylaxis is the surest and safest line of treatment for the relief needed.

All practitioners of dentistry should, in the interest of humanity, combine without delay in the advocacy of and effort for reform practice that will meet the demand; and dental students when they enter college should have the benefit of the requisite instruction in prophylactic treatment for diseases of the teeth and gums, so that their professional services may be on the highest plane of usefulness.—*Dental Brief*.

A MEDICAL CRAZY QUILT.

BY W. B. KONKLE, M.D., MONTGOMERY, LYCOMING CO., PA.

The Carpet in the Doctor's Office.—Full-sized, permanently laid carpets are an abomination in the eyes of the sanitarian. This general proposition needs no discussion here—indeed, to adduce arguments in its support would be to insult the intelligence of my hearers—its correctness in the abstract form will receive no challenge within a body of scientists. If an abomination even in private residences, what must be said of carpets in the doctor's office! Here, indeed, are they the very abomination of abominations. Again is no elaboration or substantiation of

the statement necessary; again will no contradiction be offered. Floors laid in hard-wood or cement, or covered with oilcloth or linoleum are indicated. Mats and rugs which are frequently well beaten and aired may be admissible. In this whole matter medicine's first and most sacred law imperatively applies—*do no harm*.

The Office Cuspidor.—The writer has never found any way of dispensing with the office cuspidor. An eyesore and a nuisance it most truly is; but, like other evils of this world of evil, it seems to be inevitable. Scrupulous care as to cleanliness and antisepsis may palliate the offence and disgrace of the thing; yet, at the best, it remains an outrage to refined sensibilities and tastes. Better, however, an open affront to the eyes and nerves than a hidden menace to life and health. To the credit of our race may it be said that the average person is fairly well informed, fairly well bred, fairly well disposed. But forever over against the best is the worst. Natural selection has not eliminated a certain depraved remnant of mankind. The human ass, and the human swine endure. And they come into our offices—we could not prevent them doing so were we to try. They are pre-eminently spitters. A queer law seems to operate in this connection—the development of the salivary glands and that of the higher cerebrum appear to stand in inverse ratio to each other—the less a man knows the more he spits. They come—we could not teach them good manners in the space of minutes, even were we always there, which we are not, and had we the minutes to spare, which we have not—at any rate gentle folk are born, not made. A sole alternative is left to us, we can provide a receptacle; if we do that, these dunderpates will do the rest; indeed, they will do the rest cuspidor or no cuspidor.

Head Washing.—I have a growing conviction that people as a rule do not wash their heads enough. Civilized man is a bather. The practice of bathing as to its motive is, however, in the main esthetic and sensuous, rather than sanitary; so that therein manifest are not a few inconsistencies and crudities. As intimated, one error of omission pertains to the hairy scalp. The hands and the face are scrubbed religiously every day and oftener; the head has its comb and brush, with periodic cleansings akin to housecleanings. And yet the head is especially exposed as concerning dirt and germs, for which it constitutes a most favorable place of deposit. The brush and comb and dry shampoo may produce satisfactory results in the way of fashion and appearance; but what have bacteriology and hygiene to say about it? Indeed, our method of bathing, in not embracing a thorough daily washing of the scalp and hair, are lacking at an essential point. In this they are like those women's drawers of classical and prevailing cut, which fail to cover the very parts that most need covering. For obvious reasons this whole argument applies with more force to the doctor than to the layman.—*New York Medical Journal*.

CURRENT COMMENT.

An eye for an eye and a tooth for a dollar.—Dr. N. J. Lynott, in a paper read before the East St. Louis Dental Society, makes the following remarkable statement: "But what will give a dentist more advertisement among the poor and the so-called middle classes, or what will be the source of more future dollars, than to have the reputation of being a good extractor?"

While it is a fine thing to be a good extractor, we do not agree with the idea that this talent should be used as "the source of more future dollars," especially when it is employed as an "advertisement" intended for "the poor and so-called middle classes." Such a reputation is, no doubt, frequently responsible for the extraction of teeth that should be retained. The fact that a man with such a reputation is available will frequently influence a patient to have a tooth extracted in preference to having some one of the many modern methods of preservation applied to it. We recall a small town in the interior of Pennsylvania where two dentists hold forth—one of them has the reputation of being a "good extractor" and is fairly prosperous; the other, after nearly seven years, is about to give up his attempt to establish a conservative practice. In this town the people have been educated to have their teeth extracted, and in the influence which has brought this about is the fact that Jones is such a good extractor. Back of all this is the fact that Jones, who is a good fisherman as well as a good extractor, is too lazy to practise dentistry, being entirely satisfied to pull teeth as the source of "more future dollars." No dentist can expect to be pushed to the front through pull.

At the October meeting of the Philadelphia Academy of Stomatology, the treatment of pyorrhea alveolaris was the subject under discussion, Dr. H. W. Gillette, of New York, being the chief speaker. Owing to an unavoidable delay we did not reach the meeting until the general discussion was about over, but in time to learn of Dr. Gillette's belief that instrumentation is the chief factor in bringing about a cure in these cases. We heard no statement to this effect, but the exhibition of a set of instruments (150 in number and designed for use in such conditions) seemed to be sufficient evidence that instrumentation was given considerable if not full credit for the results reported to be obtained by the speaker. Had we taken part in the discussion we might have asked, can this mechanical or *traumatic* treatment of pyorrhea alveolaris be indulged in without the histology of the parts being taken into careful consideration? Is there to be no thought for the delicate fibres forming the dental ligament, that specialized portion of the alveolo-dental membrane

about the rim of the alveolus, whose function it is to right the tooth when slightly rotated in its socket by the normal forces of mastication?

Is no pity to be shown the principal fibres of this membrane as they pass out to embed themselves in the walls of the alveolus, or inward to attach themselves to the cementum? Is it reasonable to suppose that this delicate arrangement of connected tissue is immune to ill effects from such intolerable abuse as that of scraping or scaling the roots with the idea of regenerating the parts? If calculus is present (and we believe it is only in a small percentage of cases) this should be carefully and thoroughly removed by the use of a few special scalers, but if 150 are to be employed, or even if a pretence at using this number be persisted in, is it not possible that a case of pyorrhea alveolaris might soon be followed by one of dementia, the unfortunate subject being either the patient or the operator?

At last we are definitely advised that "There is only one way to make a crown, just one." How unfortunate it is that we have had to wait all these years for Dr. T. J. Hatfield, of York, Neb., to make this announcement and come to the rescue of the entire dental profession, which up to this time have been groping in the dark. Dr. Hatfield makes the statement that he often wonders when reading many articles in dental journals why men use so much time and talent in this direction as is often done. This advice, which appears in the *Dental Digest* for August, is followed by a brief two-page description of making a platinum and porcelain crown, which, however, he claims to have described at length in a previous paper. Step by step the description proceeds without the introduction of a single new feature until the reader is advised to temporarily close up the canal in the root with a common carpet tack. This in face of the fact that he is opposed to the use of gold in crown or bridge work.

There is a good deal of common sense and sound advice in what H. Everton Holsey has to say in the September *Items of Interest*. He exploits his views as to how a dental practice should be conducted to make money—a matter not entirely without interest to many of us. He believes that a cold sponge and a good rub, a brisk walk, well-tailored clothes and a two-dollar tie, all play a part in producing the money-making dentist. He describes the equipment of the waitingroom and office, and says that the lady assistant should keep the books, write letters, collect the money and answer the telephone—advocates that an estimate (?) of the cost of dental work should be furnished the patient; tells how to invest and speculate to insure substantial returns, and many other things, which after careful reading impress one with a longing desire to meet Dr. Holsey, visit his

office, see his cravat, and if possible take a peep at his bank account. Dr. Holsey is, no doubt, sincere, and we are prompted to ask him if in his experience wealth brings happiness.

The mouth defined as an organ.—In a well-written paper, entitled "A Study of the Mouth," in the *Dental Brief* for October, M. N. Johnson, M.D., of Hartford, refers to that cavity or space as an organ. He says it (the mouth) is the organ of articulate speech, and that it "has the greatest diversity of uses of any organ possessed by man." While the authorities define an organ as "Any part of the body having a determinate function," "A complex of similar or dissimilar cells or tissues that perform in common one or more vital functions," it would seem to be unusual to apply it to "the aperture of an animal used for eating or speaking." True, the mouth contains certain organs and parts which assist in the performance of these acts. Its movements and its walls have much to do with articulate speech, but is this fact sufficient to justify denominating this space, which is nothing more than the proximal terminus of the alimentary canal, an organ? We think not.

J. P. R., one of the editors of the *Western Dental Journal* would have his readers believe that they should be able to form an opinion regarding the peculiar qualities or characteristics of the dental editor by reading his editorials. In a recent issue he makes some jocose statements in regard to several gentlemen who may for a brief period feel very much disturbed as a result of his seeming indiscretion. In the meantime, however, we are impressed with the belief that J. P. R., whose place in life could never be judged by what he writes, has by his very clever classification of the habits of some dental editors furnished the profession with information which they could never have obtained any other way, and which they could perhaps manage to get along without.—I. N. B., in *Dental Brief*.

Dominion Dental Journal

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VOL. XIX.

TORONTO, DECEMBER, 1907.

No. 12.

THE NEW BY-LAWS.

The by-laws recently passed by the Board of Directors of the Royal College of Dental Surgeons of Ontario, which are herewith printed, are the direct outcome of some of the objectionable methods of practice which have sprung up during the last few years. The profession and the Board have up to the present time paid but little attention to their responsibility to the public. The need was not urgent, but since individuals and companies have been formed to do dental practice, using a few misfits and failures in the profession as hirelings to protect themselves against prosecution, there is a necessity to take action. Licentiates who lend themselves for so much a week to those who are not dentists must earn their salaries regardless of the patient or lose their positions. The directors of the concern want dividends; they don't want the public taken care of. It's their money they want. A patient has no recourse against the individual who makes the operations, because he is never known to the patient by name. He is the clerk number 4 to the office,

nobody to the patient. There is no personal responsibility. The intention of the by-law is to make the operator known to the patient and compel him to take the responsibility of his operations.

In concerns where the owners are not dentists there is usually a manager who meets the patients and makes contracts with them for the operations they need, or for operations they can be persuaded they need. This man is sometimes called the contractor. He directs the operator who is to do the operations. Such an operator does the bidding of his master whether it be in the interests of the patient or not. Operators in such places often work on a weekly salary and commission. If the operator can persuade the patient to pay more for the operations than agreed to by the contractor he receives from thirty per cent. to seventy-five per cent. of the amount of the increased charges. To an ordinary person one might think patients would pay only what was at first agreed to. But they are approached in such a smooth way, and the opportunity for deception is so great, that they are easily persuaded. Dentistry is like few other callings; the patient knows little or nothing about what should be done, and has no knowledge of whether that which was promised was carried out or not. Thus the patient is at the mercy of the operator, as is the case in surgery. Where such relationships exist between the dentist and his patient there is the greatest opportunity for deception and fraud.

A few examples of how a confiding person may be deceived or induced to pay more money than at first agreed to will give some idea of the possibilities of the dishonest dentist. A patient sees an advertisement of full sets of teeth for \$3.00; amalgam fillings, 50 cents up; porcelain fillings, \$1.00 up. He asks for a set of teeth, the three-dollar kind. If he should happen to have any teeth remaining in his mouth his could not be a full set, consequently he cannot take advantage of the bargain offered. but is persuaded that in his particular case he should have some special color of rubber, and that the teeth should be different from the ordinary person's, and consequently it will cost him ten or twelve dollars. Another plan is to show a heap of old dentures for the patient to choose his set from. No suitable one can be found, of course, and being a special case he will have to have one made specially for him, which may cost fifteen dollars, and to make it strong a gold bar should be put in the den-

ture, which will raise the price to twenty. Another scheme is to make a denture on German silver base and gold-plate it, and give it to a patient for a gold plate. The patient may be approached in the filling question about like this: "We advertise amalgam fillings, the same material that other dentists use, for fifty cents. It is the kind of material put in the ordinary person's teeth, but yours really require a better filling. You would rather have the best. We have silver at one dollar, gold and silver at a dollar and a half, or platinum and gold at two dollars. The patient gets the same filling or a worse one the more he pays for it. The gold and silver filling is simply a pellet of gold added to the alloy as it is being mixed. The pellet of gold looks large to the inexperienced eye and helps to deceive. The platinum filling is a bluff at adding platinum to the alloy. In each case the filling is a worse one by adding either the platinum or the gold, even by the microscopic amount added. A very common form of deception is to advise a patient to have a gold crown to cover the whole of a tooth when as a matter of fact there is but a small cavity which should be filled. By this scheme the patient is persuaded to give up from five to fifteen dollars for a ready-made gold crown worth about one dollar and fifty cents, and have a good tooth mutilated and endangered to pyorrhea, while a filling which would be better would cost him not more than a couple of dollars. There are dentists so greedy and so dishonest that they have persuaded patients to have perfectly sound teeth covered with gold so that they might get the fee. When such practices are so common as they seem to be to-day, it is high time a by-law was passed that will have for its object the protection of the public against such forms of fraud.

It might be said that patients so defrauded would not again ask the services of those who defrauded them. This may be quite true, but when you stop to think that less than half of the population of Ontario ever visit a dentist, there is always virgin soil for the fakir to work upon. In fact, there is a studied intention to avoid having a patient call at a later date when he might have found out that he was deceived. They try as far as possible to get all the money he will give up, and then insult him, or in some way get into a dispute with him, so that he will never come back.

These are but a few of the methods adopted by men who claim to be dentists. It is high time that an effort should be

made to bring such methods of fraud to the attention of the authorities.

The employment of unqualified assistants is a feature of professional misconduct brought prominently before the Board at the last meeting of the Legislature, when Sadie Holmes was applying for a license to practise. She claimed to have been assisting a dentist for many years, which was contrary to the law; and in this connection Hon. Mr. McKay said "the Board should not have permitted a member of the College to have such an assistant, and by doing so they had given Miss Holmes rights. The Dean replied that the Board had no authority to control such conduct in their members. To this Mr. McKay said, "You should have such authority, and if you haven't it, I will support you in getting it." The solicitors of the College advised the Board that they have the authority if they would pass the necessary by-law, which appears as Number 43, section 2, paragraph (b).

It is hoped that the by-laws may be effective in controlling the members of the college who have in the past permitted the unqualified to control them.

To the Members of the Royal College of Dental Surgeons of Ontario:

Gentlemen,—Herewith you will receive copies of By-Laws passed by the Directors of the R. C. D. S. on Oct. 23rd, 1907. That numbered 45 is of more special interest to the teaching staff. Those numbered 43 and 44 are of vital interest to every member of the College. They have been passed not only under authority of Section 17 of the Act Respecting Dentistry, but by the specific direction of this Section, the wording of the section being mandatory.

The "Act Respecting Dentistry" was passed by the Legislature in 1868 as a protection to the public. The Directors of the College, in carrying out the spirit and intent of the Act, have constantly had this fact before them. This is manifested in the gradual raising of the educational standard for students, the extension of the term of study, the widening of the curriculum, especially in its scientific and practical aspects, so that those who enter the profession of dentistry should be well fitted to fully discharge their duty to the public.

It is much to be regretted that a number of the members of the College have chosen so to conduct the practice of dentistry and to enter into such arrangements for practice with men who are not dentists, as to seriously jeopardize the interests of the public. The Directors have been forced to the conclusion that

the By-Law previously in force for "the guidance, government and discipline of the profession of dentistry," was not efficient for the protection of the public, and required amendment. The By-Laws have been drafted by eminent counsel, with great care, after thorough study of the "Act Respecting Dentistry," so as to keep well within its authority.

The Board has given the whole matter very careful consideration, and these By-Laws have been passed with a full knowledge of their force and effect and an entire realization by the Board of its own responsibilities in their enforcement. There is but one course open to the Board, and that is to put these By-Laws into effect, and it is hoped that all unpleasantness will be avoided, by every member of the College, appreciating the need and the reasonableness of these By-Laws, assisting the Directors in their enforcement, and thus shield the public from the utterly irresponsible practice of Dentistry which has been recently developing, and elevate Dentistry to a higher ethical plane.

R. B. BURT, Pres. R.C.D.S

J. B. WILLMOTT, Sec. R.C.D.S.

Toronto, Nov., 1907.

BY-LAWS OF THE ROYAL COLLEGE OF DENTAL SURGEONS OF
ONTARIO, PASSED OCTOBER 23RD, 1907.

Be it enacted, and it is hereby enacted as By-Law No. 43 of the
Royal College of Dental Surgeons of Ontario.

By-Law No. 43, for the regulation of the profession of Dentistry.

1. No member of the Royal College of Dental Surgeons of Ontario shall, while such member, be guilty of professional misconduct or of any conduct unbecoming a licentiate of Dental Surgery.

2. No such member shall practise his profession in such a way as that he shall or may be unable to give full force and effect to his training, experience and judgment as acquired in the course of his education by the said College, in particular and without restricting the generality of the provisions:—

(a) No member of the said College shall as employee, assistant, agent, partner, officer, shareholder or otherwise howsoever practise his profession under the control of or for the benefit, profit or advantage of any Corporation, or of any person not being duly qualified and lawfully entitled to practise Dentistry in Ontario, or in such a way that directly or indirectly any such Company, or unqualified person may or shall make thereby any profit, reward or advantage.

(b) No member of the Royal College of Dental Surgeons of Ontario shall employ any person not legally qualified and duly authorized under the said Act to prescribe any medicine or dental treatment or to perform any dental operation, or shall permit any such person in his name, or for his benefit, on or about his

premises, to prescribe any medicine or dental treatment, or to perform any dental operation upon any person whatever.

(c) No member of the Royal College of Dental Surgeons of Ontario shall practise his profession as a dentist within the Province of Ontario save only in his own name, or under the name or names of some other duly qualified and authorized member or members of the said College.

(d) No member of the Royal College of Dental Surgeons of Ontario shall in any manner whatever practise his profession subject to the authority or control, express or implied, of any person not a member of the said College.

3. Any member of the said College who shall have been found by a competent Court guilty of fraud or mal-practice, or of obtaining money by false pretences in connection with his practice as a dentist, or of any other serious offence, or who shall have been found by a competent Court to have committed any act which in the opinion of the Board makes it improper that he should be allowed to continue to practise his profession, or who shall have been found by the Board guilty of contravening any of the provisions of this By-Law, shall be deemed to have been guilty of conduct unbecoming a licentiate of Dental Surgery.

Be it enacted, and it is hereby enacted as By-Law No. 44 of the Royal College of Dental Surgeons of Ontario.

By-Law No. 44, for the proper and better guidance, government and discipline of the profession of Dentistry, and the carrying out of the "Act Respecting Dentistry."

1. By-Law No. 10 is hereby repealed as and from the date of the going into operation of this By-Law.

2. The Board of Directors of the Royal College of Dental Surgeons of Ontario shall appoint, at the commencement of each Bi-Annual term, a Discipline Committee to be composed of three members of the said Board. The first named shall be chairman of the said Committee. The members of the said Committee shall hold office for the term of two years and until their successors are appointed. Any vacancy occurring in the Committee may be filled by the remaining members thereof, or, in default, by the Board. Two members shall form a quorum.

3. The said Committee shall have power to receive, consider, investigate and report on all complaints of offence against this By-Law, and all complaints in respect of the government, discipline and regulation of the profession of dentistry, and with or without any complaint, to investigate any and all such offences. and any and all matters relating to such government, discipline or regulation.

4. Before the Committee shall proceed to the investigation of any such complaint, such complaint shall be made in writing to the Chairman or Secretary of the Board, and if required by

the said Chairman or Secretary, shall be verified by statutory declaration.

5. Upon receipt of such complaint, so evidenced, if required, the same shall be presented to the Committee for its consideration, who shall thereupon, if they deem it expedient to proceed with the investigation of the said complaint, appoint a time and place for such investigation, and shall duly notify the members of the Committee, the complainant and the person complained of, of such time and place, and they shall within a reasonable time before the date fixed for such investigation, give to the party complained against a copy of the said complaint and of the declaration, if any, verifying the same.

6. The Committee shall have power to order the production before it of all books and papers relating to the matter, and to examine and cross-examine the parties and their witnesses in respect to the matters in question.

7. If the Committee shall be satisfied that the person complained against has been guilty of contravening the provisions of By-Law No. 43, the Committee shall report the evidence and their finding to the Chairman of the Board, which Board may, thereupon, review the said decision, and if the said decision be confirmed by the Board, or a two-thirds majority of those present at a meeting thereof, the said Board may, by a like majority, suspend or cancel the certificate of the accused; provided that the quorum of the Board for all purposes of this By-Law shall be five.

8. If the Committee shall find the accused not guilty of the offence charged, they shall report their said findings to the Board, but without reporting the evidence unless the Board shall specially so order.

9. Notwithstanding anything hereinbefore contained, the Board shall have the right, power and authority to order the restoration of the certificate or the renewal thereof at any time upon such terms and conditions as they shall think fit.

10. If the accused shall have been found guilty and the certificate suspended or cancelled, he shall have the right to appeal to the Judge of the County Court of the County of York, and the Board shall be bound by and shall carry out the finding of the said Judge.

Be it enacted, and it is hereby enacted as By-Law No. 45 of the Royal College of Dental Surgeons of Ontario.
By-Law No. 45, to amend By-Law No. 8 of the said College.

By-Law No. 8 is amended by adding thereto the following sections, viz. :—

Section 9.—There shall be a Faculty Council which shall be composed of the teaching staff of the School of Dentistry, and of

which the Dean shall be chairman. Instructors and Demonstrators shall act as assessors only, and shall not be entitled to vote.

Section 10. —The powers and duties of the Faculty Council shall be: (a) To make rules and regulations governing its proceedings, including the determining of the times of meeting and the quorum necessary for the transaction of business; (b) To fix and determine the subjects of study and the arrangement of the curriculum of the School of Dentistry, subject to the approval of the Board; (c) To consider and report to the Board upon such matters affecting the School of Dentistry as to the Faculty Council may seem meet.

PRACTISED DENTISTRY WITHOUT BEING LICENSED.

"W. A. Bell, 486 Markham Street, Toronto, was fined \$20 and costs for acting as a dentist without being a licentiate of the Royal College of Dental Surgeons.

"Mr. East appeared for Bell and pleaded guilty, asking that the costs be remitted.

"'No; this is the third case, and he has had an example of what happened to the others. It's \$20 and costs,' said the magistrate.

"W. H. Price prosecuted for the Dental College."—*Toronto Telegram*.

About three years ago the DOMINION DENTAL JOURNAL, in an editorial, called the profession's attention to the fact that there were in Toronto and other cities dental laboratory men who were doing operations which were not permitted under the Dental Act. The article in question brought forth two or three letters from dental laboratories claiming innocence.

The profession should be absolutely certain that no professional work is done by the man to whom they send their laboratory work. It is generally believed that Mr. Bell has been conducting a regular dental practice along with the laboratory work he gets from the profession. In fact, he has a dental operating room fitted up, which is no part of a dental laboratory equipment. The present Board and the chairman of the Discipline Committee are setting about to clear up some of the offenders, and they need all the assistance the profession can give them.

TORONTO DENTAL SOCIETY.

Moved by Dr. J. B. Willmott, seconded by Dr. A. E. Webster, and Resolved: That the members of the Toronto Dental Society have heard with profound regret of the untimely death of the Hon. S. W. McInnis, D.D.S., M.P.P., Minister of Education and Provincial Secretary of the Province of Manitoba. At a relatively early age Dr. McInnis had reached an honorable and prominent position, not only in his chosen profession, but also in the councils and government of the province in which he resided. To the efforts of Dr. McInnis is very largely due the organization of the Canadian Dental Association and the Dominion Dental Council, and for this service he will be held in grateful remembrance by the Dental Profession of Canada.

That we tender to Mrs. McInnis our deepest sympathy in her sad and sudden bereavement, and assure her that the members of the Society hold in greatest respect the memory of her deceased husband.

That a copy of this resolution be sent to Mrs. McInnis.

DR. BUCKLEY COMING.

The Toronto Dental Society has been fortunate in securing such an eminent authority in dental medicine and therapeutics as Dr. J. P. Buckley, Professor of Materia Medica and Therapeutics in the Chicago College of Dental Surgery. Dr. Buckley will discuss some feature of his special subject before the January meeting of the Toronto Dental Society.

ONTARIO DENTAL SOCIETY.

The annual meeting of the Ontario Dental Society will be held in Toronto, Feb. 17, 18 and 19, 1908. That distinguished dentist, with the world-wide reputation on filling teeth with gold, Dr. Weidlestadt, will be present and discuss the packing of gold into cavities of teeth. Dr. Ledwitch, of Chicago, will discuss porcelain and give a clinic. He has a reputation in porcelain which is well known in the West, and to some extent in Canada.

Look for new features in the handling of porcelain in his clinic. Dr. Hofheinz, of Rochester, is expected to discuss some features of amalgam fillings. Children's teeth will be discussed by a local light. Amalgam fillings will constitute a feature of the clinics. Cast gold inlays will be demonstrated by every known method.

Editorial Notes

We regret to chronicle the death of Dr. Cleary, of Ottawa, and Dr. Elliott, of Cobden.

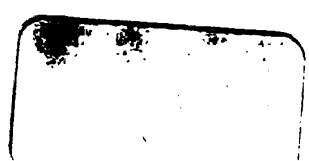
Dr. Delliane, Toronto, died on Dec. 17, 1907, in the General Hospital, of typhoid fever.

Dr. Manly Bowles begs to inform the profession that he has limited his practice to orthodontia. 420 Somerset Block, cor. Portage and Donald, Winnipeg, Dec. 1907.

Edgar W. Paul, L.D.S., D.D.S., wishes to announce that on and after the first day of January, 1908, he will confine his practice exclusively to the administration of anesthetics (especially nitrous oxide and nitrous oxide and oxygen) for surgical purposes, and the extraction of teeth. His office will be located in the Bank of Toronto Chambers, 205 Yonge Street, opposite the store of the T. Eaton Co., Limited. Dr. Paul will manufacture his nitrous oxide gas, thus insuring its purity, freshness and administration at proper temperatures. When circumstances demand it, Dr. Paul will perform the operation at the home of the patient.

Dr. George W. Grieve begs to announce that he will limit his practice exclusively to Orthodontia after January 6th, 1908. 29 Traders Bank Apartment Building, cor. of Yonge and Bloor Streets, Toronto.

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